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AMERICAN PHARMACEUTICAL ASSOCIATION

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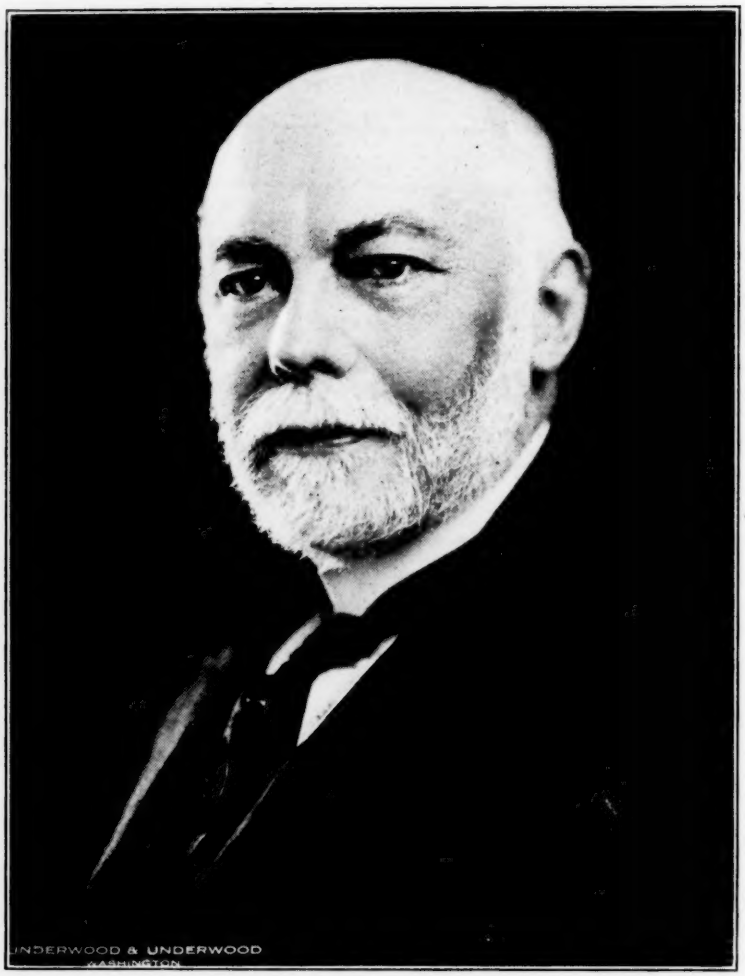


Underwood & Underwood Studios, Washington, D. C.
FREDERICK BELDING POWER.

Affiliated with the American Pharmaceutical Association in 1872.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XI JUNE, 1922 No. 6

FREDERICK BELDING POWER, PH.D., LL.D., F.C.S.

The subject of this sketch was born at Hudson, N. Y., March 4, 1853, where his early education was acquired at a private school and at the Hudson Academy. At the early age of 13, he entered a pharmacy in his native town, where he served for five years. This was a period of strenuous work from early morning until late at night, but much valuable information was gained regarding the character of drugs and chemicals and a stimulus was given for the pursuit of chemical studies. A desire was soon awakened in him for further knowledge respecting the methods of preparation of chemical compounds, and the first book he purchased as a guide in this direction was a copy of Parrish's "Practical Pharmacy." There was probably no thought at that time that circumstances would so develop within a very few years as to afford this studious youth the happy privilege of being associated with Professor Parrish as an assistant in his pharmaceutical establishment. The first experiment that may be recalled during the early years of Power's apprenticeship was his attempted production of the so-called *pyrophorus* by carbonizing a mixture of dried alum and sugar and heating this mixture in a Hessian crucible to redness in the kitchen stove. By means of the information gleaned from the above-mentioned book, Power found it possible to prepare a considerable number of the ordinary medicinal chemicals, and this collection was to him a source of much gratification and pride. Through the kind interest of a medical friend during these early years of service, the idea was suggested that he should attend a school of pharmacy, and such an opportunity was offered by his acceptance of a position in the pharmacy of Thomas Whitfield, Chicago. At the age of 18, Power accordingly left his boyhood home for the purpose of gaining wider experience and increasing his knowledge. The plans that had thus been made were, however, for a time frustrated by the disastrous fire that occurred but a few months after his arrival in Chicago and caused the nearly complete destruction of the city. Power decided in the spring of 1872 to go to Philadelphia, and but a few hours after his arrival in that city he was offered a position in the pharmacy of Professor Edward Parrish. A new world was here unfolded to the aspiring youth, and it was his good fortune to have become intimately acquainted with many of the leaders in pharmacy of the period; the friendships and recollections of those days have been cherished by him through all the later years of his life.

It was in 1872, just half a century ago, that the subject of this sketch became a member of the American Pharmaceutical Association, and his application for membership was signed by Professors Parrish and Maisch. It was also just fifty years ago that camphor monobromide was first prepared by Power on a large scale in Parrish's laboratory, and a specimen of this product in handsome, colorless crystals made in 1872, is now preserved in the United States National Museum at Washington.

The lamented death of Prof. Edward Parrish in the summer of 1872 while on a peace mission to the Indians in what was then the Indian Territory, now the State of Oklahoma, led to the recall of Prof. William Procter, Jr., from his retirement, in order to deliver the lectures in pharmacy, and he died at the close of the session in 1874. The course of instruction at the college, which then consisted only of evening lectures, during a period of about five months for two consecutive years, together with optional exercises in the chemical laboratory, was attended by Power, and he graduated with high honors in 1874, having been awarded by the Alumni Association the highest prize in chemistry. A close friendship was then formed with one of his classmates, Henry S. Wellcome, which has continued unabated through all the intervening years. It could then not have been foreshadowed that it would lead to so much closer association with him in the future.

Having been persuaded by some of his friends to continue his scientific studies, Power decided to go to Germany. He was accordingly matriculated at the University of Strassburg in 1876, and pursued his studies there for four years, receiving in 1880 the degree of Doctor of Philosophy. During that period he attended the lectures in several branches of natural science, worked daily in the laboratories, carried out important researches, and was brought into close association with his teachers. He was especially befriended by Professor Flueckiger, who constantly manifested a deep and almost fatherly interest in him, and during the last year of his sojourn at the university he served as his officially appointed assistant.

After returning to America in 1880, Dr. Power was in charge of the chemical laboratory of the Philadelphia College of Pharmacy for three years, when he was called to a professorship in the University of Wisconsin. He there organized and directed the school of pharmacy and gave instruction in both pharmaceutical chemistry and materia medica by lectures and laboratory work. While in that position he also served on the Committee of Revision of the U. S. Pharmacopoeia, and a large part of the work pertaining to the Pharmacopoeia of 1890 was committed to him. In 1892 he responded to a request to become the Scientific Director of the new works of Fritzsche Brothers, then a branch of the firm of Schimmel & Co., Leipzig, which were located near New York, and during the four years that this position was retained many important scientific investigations pertaining to essential oils were conducted.

The next most important event in the career of Dr. Power was when his friend, Mr. Henry S. Wellcome, in 1896 established his Chemical Research Laboratories in London, and appointed him the director of that institution, which has since gained such renown in the scientific world. He was thus in a position to devote himself exclusively to chemical research in which he was assisted by a large staff of highly trained chemists. During those years in London, Power gained a wide reputation for the highly scientific character and fruitfulness of his researches, which covered a wide field, especially in plant chemistry. The results of these researches were communicated to the various learned societies and published in the leading scientific journals. At the same time an opportunity was afforded him

of meeting many of the most prominent scientists of Europe, with some of whom close and enduring friendships were formed.

Dr. Power was elected a fellow of the London Chemical Society in 1896, and he was also intimately associated with the Society of Chemical Industry on the Council and Publication Committee of which he served for several years.

He resigned his position in London the latter part of 1914 to enable him to return to his native country and be near his family. His scientific work has been continued in the phytochemical laboratory of the Bureau of Chemistry at Washington, D. C., of which he has been in charge since it was organized. This more limited field of work has, however, afforded him the opportunity for conducting many interesting investigations.

The many years devoted by Dr. Power to scientific work have been attended by numerous expressions of appreciation from the foremost scientists at home and abroad, and he has been the recipient of many high honors; among these it may be noted that in 1908 the University of Wisconsin conferred on him the honorary degree of Doctor of Laws, in 1913 the Chemical and Linnean Societies and Pharmaceutical Society of Great Britain jointly awarded him the Hanbury Gold Medal in recognition of his researches in the natural history and chemistry of drugs. This was followed by the presentation to him of a beautiful illuminated address and album which represented the appreciation of numerous scientific men in many parts of the world and contained their signatures. On retiring from his position in London in 1914, a gold medal bearing his profile portrait in relief was awarded him by Henry S. Wellcome. This medal was inscribed in recognition of his distinguished services to science during the eighteen and a half years he was Director of the Wellcome Chemical Research Laboratories in London. The presentation of this medal took place in Washington, D. C., in May 1921, in the presence of Mr. Wellcome and a very distinguished company. The address on this occasion was delivered by Dr. Charles D. Walcott, of the Smithsonian Institution and President of the National Academy of Sciences, who in the course of his remarks said:

> Dr. Power for fifty years has spent his thinking hours among the complicated molecules of organic compounds, and, because he possesses that peculiar faculty of exhausting each subject which he takes up, has had the greatest influence both in America and Great Britain in raising the standards of our Pharmacopoeias. He has gained distinction by his most difficult and life-consuming researches into the chemical composition of plant compounds.

Honorary membership in various scientific societies and institutions have been bestowed upon him, and he has received many awards, consisting of grand prizes, gold medals and diplomas of honor, from the great international exhibitions at which products of research by Dr. Power were exhibited. Dr. Power was awarded the Ebert Prize in 1877, 1892 and 1906. He was elected vice-president of the United States Pharmacopoeial Convention in 1920. The most recent and greatly appreciated honor was his appointment by President Harding as a member of the National Research Council on the Committee of Federal Relations. E. G. E.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

COMMENCEMENTS.

During the month of June most of the schools and colleges of pharmacy hold their commencement exercises—a year has closed, another will soon open. The number of applicants knocking at the doors of these schools and colleges now exceeds the number of students who can be accommodated by some of these institutions. The result will be that qualification rather than priority in making application will govern in the selection of the student body, and this will influence the discussions of pharmaceutical conferences this year.

The same conditions obtain in most institutions of learning—a dean of a medical college recently made the statement that the college with which he was connected had more than one thousand applicants, and out of this number only 150 could be accepted because of facilities and accommodations. Such proportions need revision, either there are not enough medical colleges, or too many desire to take up the practice of medicine, or both. All of the applicants had the required preliminary education, and, as a result, some will take up other studies, or engage in other work; others will enter the related fields of medicine and some those which are objected to by "legitimate" medicine. There is need for more physicians in certain communities wherein the state may be at fault on account of withholding financial support from the medical department of the state university; the same is probably true of pharmacy schools.

The development of pharmacy differs from that of medical practice; in the latter, professional service is followed by all; in that of the former, a considerable number engage in business and do not pursue pharmacy in fact, after graduation.

Changes have occurred, but it is difficult to say exactly what the trend is, or will be. On this, to some extent, the classes in pharmacy schools hereafter will depend, but it must be recognized that the training for pharmacy fits individuals for many other activities, and year by year the pharmacy schools are turning out better-educated trained men and women, and some of these leave pharmacy to engage in other work wherein one or the other of the underlying sciences is essential, and the training for pharmacy very helpful. So while argument seems well supported that within a few years there will not be so many students in pharmacy schools, there is also the one just presented, for which there is conclusive evidence.

The statement is still occasionally made that there will be a division within the drug business and that this will influence the schools, but it can hardly be said that progress in that direction has been rapid. Others hope for the day of coöperation of all medical activities that will bring medicine and pharmacy together in the laboratories represented not only by the institutions of learning but of those attached to or part of manufacturing establishments, associated for comprehensive research and service. Such work has been done, but not in a coördinated and co-

operative way—the manufacturer has responded to the pharmacists' and physicians' demands, the laboratories of the schools and of the manufacturers have produced and standardized the products and the materia medica, but there has not been the fullest coördinated coöperation of the industries, the professions and the schools.

There has been a growth of "isms," due largely to indifference of the public, but also to the fact that there has not been the fullest coöperation possible between the interests referred to in the preceding paragraph. Admitting that there is difference in preliminary educational standards, there are possibilities in shaping them in such a way that a better working coöperation and coördinaton will be brought about which will benefit all branches of medicine and enlist a greater public interest in sustaining and advancing medicine, because of service rendered.

Commencements mark periods in the lives of men and women and of the activities in which they are engaged. E. G. E.

THE ALUMNI.

THE former attitude toward alumni was that expressed by a college president; when asked what he thought of a proposed effort toward the organization of the alumni of his institution, "What is the good of it?" he replied, "besides I have all I can do to manage the faculty and students."

The estimate is different to-day, and each graduate who goes out is either an asset or a liability to the institution and to the profession for which he has been educated. The value of the Alma Mater to its alumni bears a somewhat similar relation.

There is a growing realization of responsibility by both the institutions and their graduates. This consciousness has made the large endowments of older institutions possible, and is quite as essential as the college spirit. Alumni should be potent in the affairs of the institutions which prepared them for their life-work, in fact, an integral part of them. So that they will be of a great influence for good and advancement it is very necessary that the student body should not only be carefully selected, but the ideals of the profession held before them during their student years, and also their obligations. It is true some of these ideals are soon shattered, but the attachment of the alumni for their Alma Mater is growing, and not so much, as some would have us believe, because of the associations during the college years, but for that which has made it possible for them to achieve success and deserve the regard of fellow-citizens.

There are possibilities which alumni can promote; the standing of their school or college is a matter of importance and pride; so also the alumni body reflects credit or discredit on the Alma Mater—there is a potential relation which has its influence for good, or may prove disastrous.

Wilfred Shaw, general secretary of the Alumni Association of the University of Michigan, in the current issue of *Scribner's* writing of "The Power of Alumni in University Life," states: "For the most part, as we view it to-day, the alumni support of our universities has been not only progressive but intelligent. It has

brought new currents into many a university backwater. In return we know that the campus, with its idealism, and devotion to truth, wherever it may be found, has not been without its wholesome stimulus to those who, having passed its portals, have returned once more for renewed inspiration."

"Who should drink to Alma Mater, cheer for her, work for her, subscribe to her necessities, tell her how to run things generally, if not her Alumni?"

E. G. E.

REORGANIZATION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

UNDOUBTEDLY, the majority of members agree that the editor of an official association organ should present a subject of great importance to the association for consideration rather than express his views thereon, and, when there is a division of opinion, to impartially publish or present both views on a question. This is the attitude of the writer, and, in his opinion, this statement is borne out by the editorial in the April issue, JOURNAL A. PH. A., p. 243. For the reasons expressed, no further comment is made by him. In this issue, papers dealing with the subject are printed; the authors participated in the discussions at one or more of the meetings of A. Ph. A. branches. E. G. E.

CLEVELAND PUBLIC SQUARE.

Eastern Section of Cleveland's Public Square.—From the Public Square radiate several of the city's principal streets and through it pass most of the city's car lines.

The American Pharmaceutical Association and associated organizations will meet in Cleveland during the week of August 14.

PHYSICS IN PHARMACY.

Author's Comments.

Utensils. Experience in this series of researches inclines the operator to prefer for meniscus observation the ordinary ten-cc stoppered cylinder (Fig. 1). For researches later described it should be divided into tenths. It need scarcely be stated that the observed meniscus aside from light refractions is subject to perplexing influences whatever may be the form or size of the container. Such complications as these tend to bring the personal equation into play, often helpful, again as a disturbing factor.

That mathematical formulas can be applied to such experiments as are herein presented, and that delicate apparatus devised for special purposes may yet be applied to the problem as a whole, needs no argument. It is sufficient to say that the author appreciates that he lacks such opportunities for precision as these could offer.

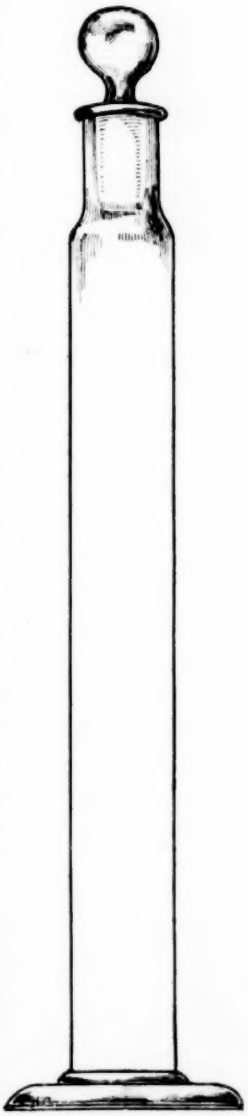


Fig. 1.

Illustrations. The meniscus illustrations that follow, utilize fractions only of the cylinder, meniscus curvatures being represented as lines. In a comprehensive way the object is thus fairly attained. These lines are not always typical of the exact plane division, as can be comprehended if one attempts to formulate into a simple diagram the bisected view of so complex and elastic a structure as is embodied by some (most) of them They present many features not apparent in the halving of a solid orange, be it round or oblique.

Reagents. Originally the liquids were, when possible, U. S. P. 1879 standard, manufactured by Powers and Weightman and Rosengarten & Sons. Not all used were, however, recognized by that work and several differ from present pharmaceutical standards. Alcohol and ethers, for example, were very different from those of succeeding editions as well as of the present U. S. P., which fact introduced interesting complications in the recent verification repetitions by J. T. Lloyd.

Verifications (1922) have been made with Squibb's and Baker's C. P. reagents. Surprising are some of the discords between these and the original. As a rule they are due (as often stated in the text) to variations between the old-time standards of the reagents, and the present. These deviations in themselves are seemingly annoying, but in connection with the subject as a whole very gratifying to the author, as will be shown if he is so fortunate as to complete publication of the old manuscript.

Personal Equation. Fortunately, after forty years have passed, the writer was relieved of the responsibility of reviewing the old manuscript as well as of repeating the experiments. His son, John Thomas Lloyd, took

upon himself this task, for which his several years' experience in Cornell University research laboratory admirably fitted him. Otherwise, notwithstanding friends have long urged publication, it is doubtful whether the writer would have ventured to put the work into print after so long an interval.

The author deems it eminently proper that these research studies should appear in the PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION as a continuation of connected contributions ("Precipitates in Fluid Extracts") temporarily interrupted in the year 1885, and appreciates the opportunity.

CINCINNATI, MARCH, 1922.

PART I.
PHYSICS IN PHARMACY.* (EXPERIMENTATION.)

BY JOHN URI LLOYD.

Outline of the Study.

Perhaps it is more difficult to establish data for a commencement of the experimental study of pharmacy than it is to initiate a process for a more restricted scientific research. This because pharmacy includes so many subjects that press forward in a body and severally demand recognition. It is a matter of regret that in this paper fragmentary selections from many topics must necessarily be made, and also that many enticing and radiating phases of study and experimentation must altogether be excluded.

It should also be borne in mind, as will be quickly perceived, that this study is directed toward such phases of our art as are not included in the usual pharmacal publications. Indeed, the title "A Study *in* Pharmacy," instead of "A Study *of* Pharmacy," was selected because it permitted such discriminative processes.

We shall be drawn to the consideration of many physical processes generally disregarded as pertaining to pharmacy but which intimately concern some of its complications and outreaches. Among such the phenomena, solution and its radiations, stands at the very doorway of pharmacy manipulation. Consequently, the general phenomenon of solution has already been especially mentioned (PROC. AM. PHARM. ASSOC., 1879–85) as including such physical forces as capillarity, mass attraction, diffusion and osmosis. Although largely neglected these influences and connected problems are yet in the author's opinion scarcely less important in pharmacal fields than is pure chemistry. Mass or contact action, structural affinity, and elective attributes of comparatively passive agents, surely produce compounds or bundles of structures not subject to rules as yet known to govern atomic wanderings, these being vital to the study of pharmaceutical preparations made of vegetable structures.

---

* These experiments and drawings were made during and closely following the series of articles, "Precipitates in Fluid Extracts," published in the PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1879 to 1885. The author then considered it vital to the progress of that contribution. After these decades it may yet be a serviceable continuation thereof.

This fragment (Experimentation) was vitalized as part of Chapter IV of our "Study in Pharmacy" issued in 1894 in the form of leaflets and privately presented to a few close friends in pharmacy. The original constitutes a hundred pages of print mainly devoted to pharmacal phenomena.

Fallacies. Liabilities to Error in Manipulation.

It seems as though our pharmacy authors have given too little consideration to, or at least have not prominently presented to us, the many fallacies and complications involved in our field by experimental investigation.

Hence, I shall, as a venture, first attempt to demonstrate that the experimenter must be constantly on his guard, lest he draw unwarranted conclusions from experimental observations. In order to establish this fact more forcibly than by a mere statement the following simple experimental examples will be introduced as illustrations, although it must be accepted that such complications are not restricted to pharmacy but concern alike similar problems met by scientists working in adjacent fields.

Measuring Liquids.

In measuring liquids, we are confronted at the outset with exceptional opportunities for error of experimentation. We must anticipate disturbances of vision that present themselves to whoever attempts to locate an object through the agency of light that passes through different media. The observer cannot (and does not) trust his vision alone in this the first step in a work with solvents. If he relies implicitly on eye presented phenomena without mental analysis he cannot measure a liquid exactly. True, the error of experiment will be small in many instances, but error at all should not appear in scientific work. The personal equation variation here depends not so much on physical blundering or awkward hands as on mental carelessness or lack of training of the senses that leads to failure to credit unseen phenomena intrusions.

Confronting us as experimentalists with liquids within glass containers, at the very commencement, we find the well-known aberration of a ray of light when it passes through different media. For example, when light passes diagonally into a dense transparent medium with parallel sides the ray is deflected toward the perpendicular and on emerging therefrom is again deflected into a course

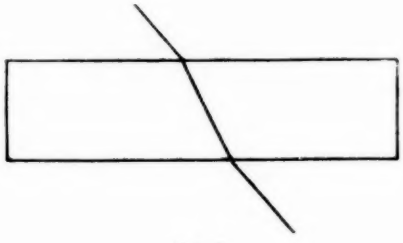


Fig. 2.

Fig. 3.

parallel with the original (Fig. 2). An object thus presents itself to the eye in a location where it does not exist. All have verified this school-book assertion or may do so by placing a plate of glass over a ruled line (Fig. 3). The line appears to be broken at the point where it passes beneath the glass and the continuation beneath is apparently separated from the extremities. The thickness of the plate of glass and the angle of vision govern the degree of displacement. The Indian thrusts his harpoon where the eye sees no fish.

In measuring liquids we have to contend with additional illusions. The graduated scale on the glass is not on a plane surface but on a cylinder. The matter is thereby further complicated, under certain conditions even to the total extinction of part of the contents within such a vessel. Hold a glass cylinder or plain tumbler about two inches in diameter parallel to the eye and then thrust a slender pencil or rod down one side; when it strikes the water it will disappear (Fig. 4). Move the rod towards the center and as that portion beneath the liquid comes into view it appears to be broken from the rod where it strikes the surface of the water (Fig. 5). It will be seen that if the operator places the rod so as to be able to really locate the portion that is beneath the water it must be exactly in the center of the glass (Fig. 6). Next, hold the glass about a foot below the level of the eye and place the pencil diagonally behind it. The pencil not only appears to be broken apart, but the portion behind the water is disconnected from the object and curiously distorted (Fig. 7). Place the glass about a foot below the level of the eye with the pencil crossed behind it and the part behind the glass is seen to be decidedly curved (Fig. 8). Raise the glass until the pencil is parallel with the eye and it assumes a normal appearance (Fig. 9). From these experiments it becomes evident that if an observer expects to locate the position of an object under these conditions, the object and the vessel must both be exactly on a level with the eye. It may be added that the glass of the vessel must also be of uniform thickness and density.

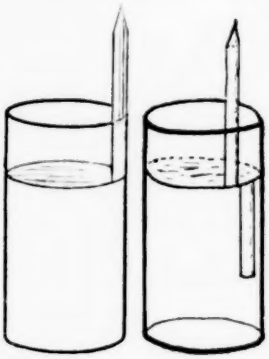


Fig. 4. Fig. 5.

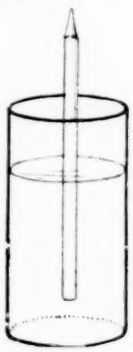


Fig. 6.

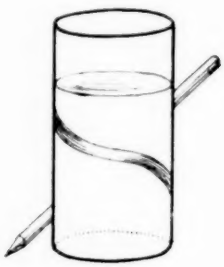


Fig. 7.

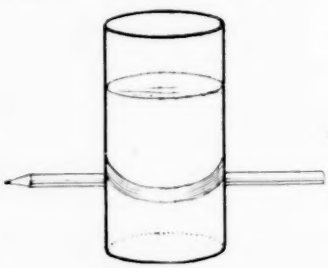


Fig. 8.

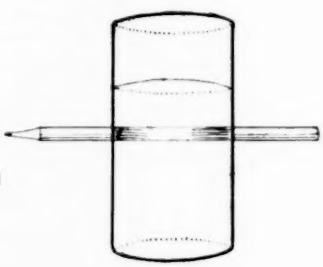


Fig. 9.

As the diameter of the vessel decreases, the optical disturbances just described increase and with small tubes great care must be taken to consider the influences cited if the operator hopes to exactly locate an object either inside the glass vessel or beyond it.

It may occur to the reader, in the act of measuring with a graduate or other chemical glass, that the location of the surface of a liquid is different from that of an object behind the liquid or in it, and that the foregoing series of illustrations, while sufficient to demonstrate the facts stated, needs yet further enlargement if applying to the pharmacist's field. In this connection the necessary details will present themselves as our work progresses.

As a further example, the appearance of a refractive medium at the zone of contact, apparently distinct from either of two contact liquids, may become so realistic that we cannot from presented optical evidence question its material existence. That such a phenomenon, however, may be altogether deceptive is easily demonstrated by creating an artificial mirage as follows:

Pour a little mercury into a cylinder.[1] Its surface assumes the appearance of the curved line in Fig. 10.

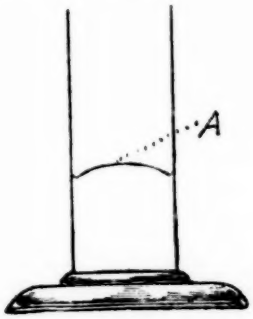


Fig. 10.

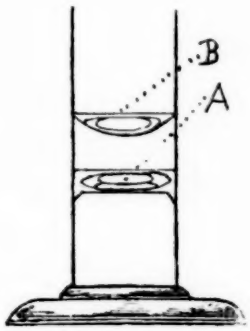


Fig. 11.

Pour upon it a layer of carbon disulphide, then look transversely through it; the mercury surface and carbon disulphide surface appear as A, Fig. 11.

The transparent, complicated structure A appears to exist *over* the surface of the mercury. It is as realistic (to me) as a lake of water that once seemed to spread before my eyes in a dry desert, and possibly results from similar phenomena on a small scale.

We know, however, that such a compound medium cannot be made of mercury and carbon disulphide as well as we know that the lake upon the arid plain is a delusion. Neither can we understand, from eye observation only, how the brilliant raised structural ring A, in Fig. 11, can have been formed as a delusion and maintained in position by contact of mercury with carbon disulphide. That it exists seems unquestionable, for it can be also seen through the overlying liquid as a central projection by looking down upon it.

Pour now upon the surface of the carbon disulphide a layer of water, and the liquids at once arrange themselves as in Fig. 12.

The floating section over the mercury remains somewhat altered, the carbon disulphide contact with the water being shown as an even curve, B, the air surface of the water as A.

Fill now the tube entirely with water and cork it. The water surface no longer exists and the ring complication over the mercury disappears (Fig. 13).

[1] These diagrams are natural size.

It is thus demonstrated to have been simply a reflection of the meniscus and surface B, of the carbon disulphide, in Fig. 11, and of the pendent drop A, of the water surface in Fig. 12. It had no material existence, being an optical illusion, and yet to the unqualified sense of sight it was as materialistic as the mercury itself.

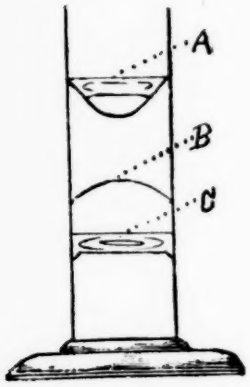


Fig. 12.

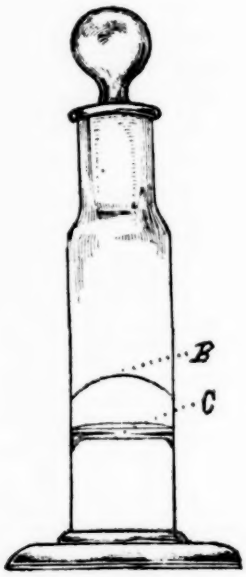


Fig. 13.

Fully as pronounced, even more perplexing, delusions appear in other phases of experimentation, as will be shown hereafter in connection with the media of different refractive powers that sometimes seem to form and rest as sections, between contact liquids.

Transparent Mercury.

Deceptive and strikingly realistic is the appearance of a globule of mercury resting in a conical paper as may be shown by the following experiment: Fold a small filter paper into a cone shape, and pour into it a globule of mercury about the size of a large pea. By inclining the paper so that the light from a side window is cast down upon it, the globule becomes limpidly transparent excepting a spot near its center. There a black speck nestles, seemingly seated beneath an overlying crystalline solution that to the sense of sight is typical of transparency, through which can be seen, if the eye can be trusted, the very texture of the paper beneath. If the experiment be made by folding a printed paper instead of a plain one the deception of the misled eye is even more conspicuous. The lines of print seem then to pass unbroken beneath the limpid globule, each as it enters the liquid curving somewhat toward a common center, which is the black spot that nestles beneath the apparently clear medium as is shown by Fig. 14. And yet we know that the globule of mercury is as opaque as charcoal.

In experimental work such as is to follow this introduction the operator who trusts to appearances may thus be deluded by reflection of the liquid surfaces

from above and reflection from surfaces in contact, as well as by the further refraction, dissipation and reflection of light from the glass and the mediums within. Such distractions, and others similar, tend to delude the experimenter and may easily culminate in self-deception, and, even with the utmost care, without methodical calculation, may lead to the most glaring errors of judgment from which the author appreciates he has not escaped.

Enough we hope has now been cited to support our preliminary statement that in such directions as these the sense of sight is reliable only when the trained mind qualifies by reasonings and deductions the impressions received on the retina.

In our field all who experiment must unconsciously guard against accepting as realities that which is unreal. Since all persons are not constituted so as to make the same subconscious theoretical deductions, it naturally follows that even in so simple a matter as the measuring of a liquid, or descriptions connected therewith, differences may be expected in the results obtained by conscientious manipulators.

Fig. 14.

And there is, lastly, ever confronting us another influence, often most serious, against which the experimenter must guard, *viz.*, his *prejudices*. Having caught a glimpse of a phenomenon, the next step may be to formulate a theory concerning it. Then we meet the danger line; for too often the operator becomes thereafter a partisan and is led subconsciously to twist subsequent experimental facts towards the theory of his own creation.

When an investigator experiences a feeling of regret at the result of an experiment, he is near, perhaps across, the danger line. Scientific *surprise* in such cases is pleasurable if one be unbiased. Research is a trust in which the manipulator is but a recording agent. Soon, unless he retrace his course when *fact* proves painful, he who forgets his responsibilities will find himself seeking for experiments by which to substantiate a self-constructed theory based on inadequate premises. An experimental disappointment based on a practical discovery may prove of exceptional scientific value.

Summary. (1922) These several pages and illustrations, scraps of an old document, are perhaps of little interest now. And yet, as the author once wrote them to precede the studies that follow, possibly rather to keep himself in a critical mind concerning delusions he should avoid, than to be of service to others, he has ventured to record them as an introduction to a series of investigations he is so bold as to title "Physics in Pharmacy."

Part II.

PHYSICS IN PHARMACY.*

(Surface Divisions between Liquids. Pendent Drops.)

We are told that inherent in each volatile liquid an osmotic pressure exists,

* "Generalities of Solution" and "Contact Films between Liquids," to follow.

in recognition of which the liquid has a tendency to become a gas and then, obedient to laws of diffusion, pass into overlying space. If in a vessel confined, its vapor finally exerts a certain pressure on the liquid's surface, at which point evaporation ceases. When one volatile liquid is poured upon another, in a closed vessel, vapor pressures, as well as diffusion, force each liquid into the other, until finally, temperature being uniform, an equilibrium is established. As commonly expressed, each liquid is then saturated with the other.

Liquid Pressure.

Liquid dispersion, in this sense, is thus analogous to and complicated with vapor-pressure penetrations, although interchange of liquids takes place very much more slowly than gases, and is likewise perhaps less affected by circulations that follow alterations of temperature.

In cases where liquids are miscible in all proportions (*e. g.*, alcohol and water) molecular pressures, regardless of circulating currents made by temperature changes, finally produce an even admixture.[1] In other cases, the contact liquids even if both are volatile can only take up certain definite proportions of each other (*e. g.*, sulphuric ether and water), and occasionally, where neither liquid is volatile, none at all (*e. g.*, glycerin and liquid petrolatum). In it all, temperature often governs interchange more directly than does volatility.

When equilibrium results, a dividing line (plane) remains, as a rule, clearly defined between most separated or saturated solutions.[2] This plane viewed edgewise as a line is made of more or less complex films of intermediate liquids under tension, presenting meniscus phenomena viewed as a whole similar to an air surface meniscus.

When liquids are capable of mixing in all proportions, as already stated, no such surface films or tension surfaces form between them, osmotic or liquid pressure being untrammeled. Their surfaces of contact disappear in imperceptible unions as the liquids blend and commingle to unity or at least to seeming rest.[3] When they are imperfectly miscible, or hostile, tension surfaces or boundary films always exist between them, which require considerable energy of osmotic pressure to overcome. Such liquids, in escaping from one to the other, seem likened to evaporations or diffusions through a foreign film or films.[4]

Since all hostile liquids (taken for granted) when pure are bounded by surface films, it may be said that liquids capable of forming homogeneous mixtures (if the lighter be poured on the heavier) mutually rub out and affiliate

[1] This is assumed. The writer has not been able to maintain a temperature actually unchanged.

[2] The formation of a dividing plane does not necessarily imply *saturation*. See later examples. The term *plane* refers to those portions of liquid contacts beyond the meniscus.

[3] Actual rest may be impossible unless unvarying temperature is maintained. Hence, a liquid of uniform admixture may be undergoing continuous structural alterations as shown by my previously published contributions.

[4] The foregoing, while explanatory of blanketed conditions, is not intended to be taken in a literally exact sense. The probabilities are that the film is constantly replaced as its surfaces disintegrate, and that the new film likewise is continually wearing away and being replaced. From my present view I would consider this stand more rational than the supposition that the liquid evaporates through the two films. Possibly both phases of phenomena are simultaneous. See experimental remarks to follow but which cannot appear in this part of the manuscript.

or absorb the opposing surface film faster than it can be produced. At least, I can see no evidence of even a temporary surface film in the contact surfaces of miscible liquids that mutually dissolve each other indefinitely. In such cases, the liquids being miscible to any extent, are never satisfied.

Thus, as an example, alcohol poured on water produces no surface film at the contact point. It can be gradually added to water without agitation until the mixture contains more alcohol than water without a film being produced, and the reverse is true. While different mediums constantly result,[1] at no time will a surface film appear. It may be said, then, that any proportion or mixture of alcohol and water that can be made will indefinitely affiliate the surface films of either alcohol or water in contact or of any mixture of alcohol and water that can be devised, destroying them as fast as they can be formed. A very complex problem is this; each seemingly thus absorbing the contact surface into itself and in return passing into the opponent.[2] Perhaps the term infinity of arrangements and rearrangements may be applied. The same is probably true of other liquids that mix in all proportions.

Surface Divisions between Liquids. The study of solvents seems, then, to begin with a study of films, which may be experimentally introduced as follows. Pour water into a beaker glass two inches in diameter and it will be crowned by a meniscus plane upturned at the edge (Fig. 15). Decant it into a tube $^3/_4$ inch in diameter and by close observation it will be seen that the section of division is

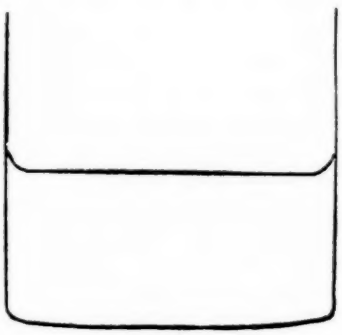


Fig. 15.

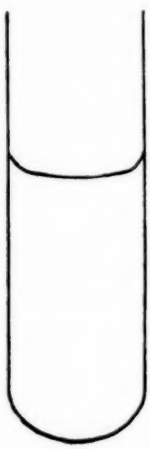


Fig. 16.

Fig. 17.

not a plane but a gentle curve (Fig. 16) while in a tube of one-eighth inch, the section of division becomes decidedly concave (Fig. 17). This also holds good for the plane between all immiscible liquids resting on each other in glass containers, excepting that for some combinations the surface of the lower liquid is

[1] See "Precipitates in Fluid Extracts," PROCEEDINGS AMERICAN PHARMACEUTICAL ASSOCIATION, 1879 to 1885.

[2] The subject of liquid film dialysis is considered hereafter. In the present case (alcohol *vs.* water), no films being formed, a conception of *dialysis* seems not to apply.

convex and with others it is concave, the upper resting oppositely. (See *Liquid Surfaces Capillarity*, not yet reached.)

Errors of Measurement. In addition to the fallacies of observation already mentioned (see Part I), we are now confronted with an opportunity to err in which the personal equation is a pronounced factor. It is evident that the meniscus consists in the uprising of the seemingly flat surface of Fig. 15, where the water nearing the glass curves upward. As we approach smaller tubes the proportion that is displaced or raised above the level increases, until with a tube of $^1/_8$ inch in diameter (Fig. 17), the problem is to determine whether the crown of the curve or a mean between that and the apex of the meniscus is nearer correct as a measurement of quantity, often a very difficult matter to determine. Since in this part of our work the object is mainly to draw attention to phases of general phenomena in which the aforenamed principles are involved, and not to ascertain how to obtain exact measurements, which feat possibly is beyond our facilitie , we may for the present pass to a more careful examination of the general nature of contact surfaces such as have been mentioned.

It may at the outset be stated and reasonably accepted, that a line of demarcation that separates liquids resting against each other, if it be a perfect plane and a theoretical surface, would be, edgewise, invisible. Conditions connected with the refraction of light, their extreme thinness complicated by container refractions, and meniscus curvatures render it in our experience impossible, under ordinary conditions, to determine the exact position or contour of the complete dividing lines. Let us with these reservations attempt to study the general appearances of these planes of separation. (See *Fallacies*, Part I.)

The Gentle Curve. In order to illustrate the difficulty attending an attempt to determine the exact edge of such a section, immerse a watch crystal or glass evaporating dish, of gentle curvature, in a beaker glass of water, and endeavor to place it in such a position that only the edge of the glass plane will be visible. The feat is impossible; part of the surface reflection always meets the eye. In like manner it is impossible (at least this writer has failed) to locate by the eye alone, the exact edge of the curved disk that lies between two liquids. Take, for example, the gradual curve that forms between liquid petrolatum and glycerin (Fig. 18), which at first glance seems to be a plane surface. It is similar to an evenly curved watch crystal, resting edgewise, within the tube. And yet this edge cannot be exactly located, for part of the surface of the disk must interfere, whenever we attempt to view the section as a whole. Either the upper or the lower surface, as the eye is above or below it, proves a light reflector, and from it the light is thus cast as from a mirror. Although the space of demarcation that located the boundaries between the liquids is probably infinitesimal and, viewed edgewise, may be actually invisible, the reflection from one or more of the surfaces is thus confused by the operator with what should be the edge of (space separating) the superimposed liquids, and which, to the observer, appears to be the real edge of the concave, disk-like segment.

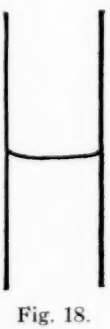


Fig. 18. Glycerin and liquid petrolatum.

In some cases, as with turpentine resting on glycerin (Fig. 19) the surface of the liquids is so nearly in a plane that the reflection from the curve of demarcation is hardly apparent, and consequently nearly invisible, appearing when the operator holds the tube exactly parallel with the eye, as a very faint line.

Fig. 19. Turpentine on glycerin.

Stronger Curves. As the lines of curvature increase the reflection from the apparent edges of the liquid becomes more clearly defined. This fact is exhibited by the mirror-like surfaces that form between water and chloroform (Fig. 20), or water and liquid petrolatum (Fig. 21) where the liquid petrolatum is poured on the water. If the reverse process is employed, and the water carefully poured on the liquid petrolatum, the curve crowns upward (Fig. 22). This phase of the problem (reversing of curves) is considered further along.

If carbon disulphide and glycerin be shaken together and allowed to separate the meniscus between the liquids is as Fig. 23. In these (Figs. 21 and 22) the

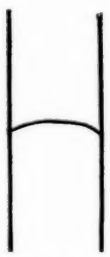


Fig. 20. Water on chloroform.

Fig. 21. Liquid petrolatum on water.

Fig. 22. Water on liquid petrolatum.

Fig. 23. Carbon disulphide on glycerin.

curvature is more pronounced than in other examples, *e. g.*, turpentine on glycerin (Fig. 19). In this case (Figs. 21 and 22) remarks concerning the invisible edge of the disk become strongly impressed upon the operator, for it is seen that with a tube of the diameter now used the crest of the curve crowned by the silver plane must be fully the tenth of an inch above the point where the prolongation of the visible curve (the apex of the meniscus) should strike the glass of the tube. Consider in this connection the division that forms between carbon disulphide on glycerin (Fig. 23), and the evidence is complete. (Also shown in reverse in Fig. 24 where the carbon disulphide is beneath the glycerin.)

Fig. 24.

With each the glass contact is unseen, the edge where the liquids strike upon the glass being at such an angle as to make the edge transversely invisible. This principle can also be illustrated by nesting an empty test-tube in a tube a size larger that is filled with water. The curved end of the empty tube reflects the light exactly as does a mirror of liquid surfaces, and, although this mirror is distinct, the line of contact where tube touches tube cannot be easily identified.

Pan-like Edges.

In the foregoing examples we have referred to contact liquid surfaces that seemingly produce clear curves in a transparent medium, and which appear to strike the glass at about the prolongation of the visible curve. Authorities, so far as this writer is informed, do not dwell upon any other form of meniscus curve, or at least have not discussed it. All liquids do not seem, however, to form such curves. Some produce nearly parallel surfaces that just before (close to) contact with the glass turn up or down after the manner of a flat-bottomed pan. Mix benzine and alcohol sp. gr. 0.820 (U. S. P. 1880) and it will be seen that the line of separation is as follows (Fig. 25): Carbon disulphide and either alcohol or methyl alcohol exhibit but a slight turn next the glass (Figs. 26 and 27). In such cases as these it is evident that by reason of the aforenamed laws of refraction and connected complications we cannot hope by direct view through the side of a tube to catch the exact upturned edge of such a line (plane)[1] of division.

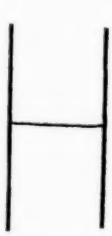


Fig. 25. Benzine and alcohol U. S. P. 1880.

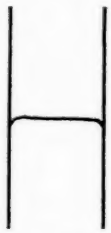


Fig. 26. Carbon disulphide and alcohol (1880).

Fig. 27. Carbon disulphide and methyl alcohol.

The writer is aware that, by mathematical rules, the degrees of curvature of the meniscus of many liquids in air contact have been calculated, which perhaps may be reconciled with under surface planes and edges now under consideration but which present complications that surely exist, as can be shown, by studying the dividing planes between such liquid contacts as are offered by carbon disulphide and glycerin if viewed in a square bottle (Fig. 28).

Compound Curves

Let us now revert to those we have cited, and consider another point. By close observation it will be seen that in most cases, perhaps all, just before the surface division strikes the glass, there is a most decided curve. The diameter of the tube much influences the degrees of these curvations. They all seem to be pan-like in this sense, although some approach to insensible distances before becoming so, and others if in small tubes appear to be perfect curves. It is evident that such curvatures are not simple but compound, and that the degree of curvature increases as the glass is approached. In some cases, as with turpentine resting on glycerin, the crown is nearly flat (Fig. 19), or amelic alcohol on water (Fig. 29). Possibly the term "*family of curves*" or progressive curves is more nearly descriptive.[2] Having no conveniences for directly establishing by direct sight

Fig. 28. Carbon disulphide on glycerin.

Fig. 29. Amelic alcohol and water.

[1] Bear in mind that the term line refers to the bisected meniscus which as a whole is a more or less curved (bag-like) plane. Also that it is not a smooth edge as it appears to the normal eye, but usually jagged, torn, irregular as shown by magnification. This is illustrated further along. For our present purpose the edge is accepted as a line.

[2] In passing onto and off from a six-degree curve, the railway engineer has found that from a tangent to one degree thence each hundred feet increasing a degree to the maximum (six degrees), thence back in like manner to the opposing tangent, makes a curve scarcely appreciated as the

such minute curves, the writer has taken advantage of the reflection of a ray of light to determine whether such compound curves as are herein shown by observation, actually exist. This experiment is described as follows (Fig. 30):

Family of Curves.

Add one grain of gelsemic acid to a pint of water in a small square vial and make it slightly alkaline with ammonia. Darken a window with opaque black paper and puncture the screen with a pin to permit a ray of sunlight to enter.[9] Then place the bottle containing the solution of gelsemic acid in the track of the ray of sunshine. From a side view it will appear a magnificent blue streamer. Lower the bottle slowly, and when the ray[2] strikes the under surface of the liquid it is at once deflected, the course being in a band downward (Fig. 31).

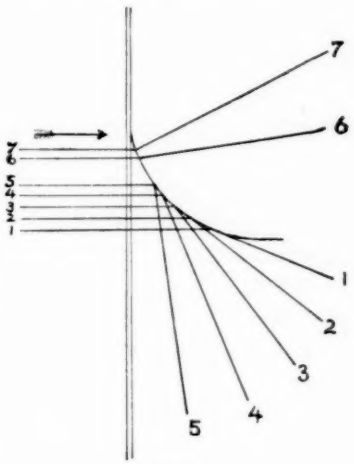


Fig. 30.
Drawn by Mr. A. J. Knapp.

By now looking directly towards the pinhole it will be found that it is invisible from opposite the exact surface line and can only be seen when the eye is in the track of the deflected ray, which is now below the surface of the liquid. By adroitly moving the bottle downward the ray is deflected increasingly (Figs. 31 to 34) and at last bursts from above the surface as shown by Fig. 36. The pinhole may be located (Fig. 34) by placing the eye above the liquid in the track

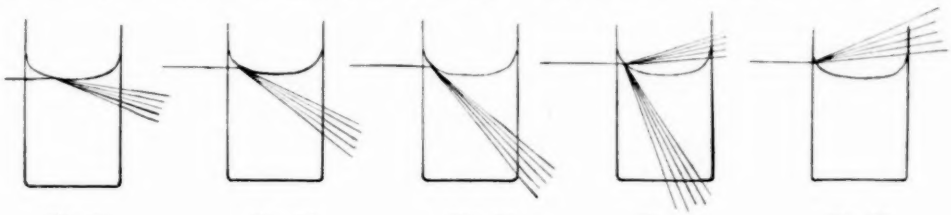


Fig. 31. Fig. 32. Fig. 33. Fig. 34. Fig. 36.
Drawn by Mr. A. J. Knapp from experiments.

shown by the upward streamer, and then it appears to be *above* the surface; and it may also be seen from the ray below the surface of the liquid, and then it seems to be situated *below* the liquid's surface. This special feature of light aberra-

train passes on and off from tangent to tangent. Some of our curves between liquids much resemble these mathematical constructions.

[1] It is best to darken the entire room in order to study the phenomenon more favorably. It is even better to construct a reflector just inside the window and throw a ray of sunlight against a piece of black paper punctured with a pin, the small compartment containing the mirror being enclosed to separate the operator from the light. By this means the ray of sunshine can be thrown in a parallel course and not at an angle. In this connection the writer will say that no artificial light has, in his hands, given the satisfaction of sunshine, and that the experiments illustrated herein were made with sunlight. (Original note.)

Later (1922). These experiments were made before the practical use of the arc light. To-day, electricity might possibly be employed even better than sunlight.—J. U. L.

[2] Actually *bundle* of light rays. Theoretically, a ray is a line, far too small to be reached by this operation.

tion in connection with our subject, however, will be again discussed under the head of liquid surfaces, where it is more readily handled.

The illustrations herein submitted are not asserted to be mathematically exact as concerns the drawing of the angle of deflection, but they present the appearances as nearly exact as the artist (Mr. A. J. Knapp) could, offhand, represent them.

Possibly by means of this process of deflection in a *thread* of light, a bottle of solution of gelsemic acid being behind the tube containing the liquid that deflects the ray of light, the exact curve of the liquid surface curve can be determined even though it is too small otherwise for measurement. The ray of light deflects in accordance with the law of signs, as is graphically depicted in Fig. 30, and I see little reason to doubt that it will be shown by proper mathematical measurement that the meniscus of every liquid produces a *characteristic* curve, also that none are as simple as they appear. In this term "meniscus" I include the complete lines or planes separating immiscible liquids discussed in a future part of this paper.[1]

Refracting Mediums. In the foregoing instances, we have considered liquids as though they were, in themselves, under all conditions, perfectly transparent and limpid to the very contact planes between them. Indeed, it would have been injudicious to have previously questioned the matter, where all authorities seem to agree (and we have daringly so accepted) that when both the solvent and its solution are colorless and transparent, the sphere of separation is two nested surface films.

That in many cases local disturbances which could not arise from clear surface reflections occur about the line of liquid contact to diffract or disturb the light and thus overcome transparency is easily demonstrated. Pour a layer of acetone upon a layer of glycerin (Fig. 38) and observe the contact edges. Instead of a clear silvery line as heretofore observed, a gray medium results that appears to be about one-tenth of an inch in thickness. This phenomenon must be caused, it seems, at first thought, by mixtures of different solutions that produce temporary wavelets (as when water is poured into alcohol, or glycerin into water) that intercept the rays of light and which should disappear when the liquids are shaken together and come to perfect rest. However, upon agitating the liquids well together and allowing them to separate, it is seen that the grayish zone of disturbance is not removed, neither can it be overcome by any method I have devised. It maintains its position about the point of liquid contacts, appearing much like a wrinkle in a plate of glass.

Place the tubes containing these liquids before the light of a flame, and it is seen that the band is a zone of division that dissipates the light and *bisects* the

[1] In verifying these experiments made nearly forty years ago, J. T. Lloyd used a test-tube containing two immiscible liquids, in front of a large square bottle containing the ammoniated solution of gelsemic acid. He also used the arc light which could be handled readily, contrasted to sunlight. Another advantage was that he employed immiscible liquids, the meniscus between them conforming to our present experiments. Test-tube A; Solution Gelsemic Acid B; Ray of Lght C. This arrangement, sunlight being employed, is shown in our figured experiments of old, which are to follow.

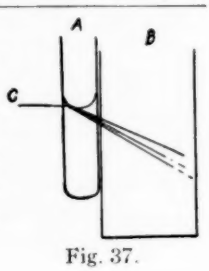


Fig. 37.

flame. Place it in the sunshine with a white screen close behind it and the zone casts a shadow upon the paper. Hold a line of print or a black horizontal line behind it and the line is effectually removed. Place the tube in an upright slit in a pasteboard box or before the pinhole in the dark room, and reflect a ray of sunshine against it by a mirror parallel with the surfaces of liquid contacts. The zone of division casts a dark band shadow.

This band with glycerin and acetone is of perceptible thickness and seemingly must be a stabilized medium of different refractive power from either of the adjacent solutions, intercepting some of the rays of light, torturing others. There seem at the zone of disturbance to be several solutions (mixtures) in unequal tensions, balanced in the aggregate, through which the struggling ray of light cannot pass directly. Such are the appearances of glycerin with acetone (Fig. 38) or acetic ether (Fig. 39) or sulphuric ether (Fig. 40). It is impossible for a ray of light to penetrate these gray refractive mediums and locate an anterior object either in exact outline or in substance correctly.

Fig. 38. Acetone on glycerin.

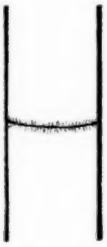


Fig. 39. Glycerin and acetic ether.

Fig. 40. Glycerin and sulphuric ether.

Reverting now to other liquids as well as those we have already considered, and examining them with the foregoing phenomenon in mind, now that the fact is mentally located, we often find a like disturbance (more or less prominently) exhibiting itself above or below the plane, even though the surface contacts may appear brilliant.

It will be observed in these instances that near the point of liquid contact there seems to be a swell as if the glass of the tube were here of uneven thickness. Whatever may be the cause of the phenomenon, its effect is to prevent the true line of liquid separation, as well as the precise curve of the meniscus between such liquids, from being accurately located.

Invisible Zones. And, that perfectly invisible zones may be located about the contact surface of liquids of different densities at equilibrium or rest, may be exemplified as follows: Make a mixture of glycerin and acetone.

ARSENIC THERAPY.*

BY HOMER W. SMITH.

Mingo Park has said that Africa was fatal but fascinating. The same may be said of arsenic, for it has fascinated mankind since ancient days, and as to its being fatal—history is replete with evidence.

Hippocrates, the father of medicine, used regular (As_2S_2) and orpiment (As_2S_3) as an outside remedy for ulcers and similar ailments, according to Sharp,[1] who has written some interesting notes on the history of arsenic. It was known to the Romans and the Egyptians and played a large part in the endeavors of the latter

* Presented before the Indianapolis Branch, American Pharmaceutical Association, March 21, 1922.

to effect the transmutation of elements. The Jews are said to have carried the knowledge of arsenic into Europe when they fled there after the Arabs drove them out of Egypt. Schabir, an Arabian chemist who lived in the eighth century, was the first to roast realgar and obtain white arsenic (As_2O_3), which he so named to distinguish it from the yellow sulphide. His knowledge became widely diffused and a new era opened in the history of this metal and its salts. Schabir has much to answer for, because the introduction of a soluble, tasteless and odorless poison put a new instrument in the hands of the poisoner—an instrument much needed in the dark days of the middle ages. Previous to the introduction of white arsenic all poisons hitherto known and employed possessed something of taste, smell or color. Here was something altogether negative—just what was desired—and in addition, incapable of being detected by any known methods.

Poisoning by arsenic was not carried out extensively, however, until the fifteenth century. It was first effectively used, it seems, by the Borgias, Caesar and his sister Lucretia, about 1500, who poisoned or caused to be poisoned so many of their opponents that they attained an evil reputation even in their day. Men came to believe anything of it—that it could be used to kill its victim in an hour, day, month or year—an alleged advantage in which there is no little truth. Various arsenic powders and liquors received enduring names, and its use spread ultimately from Italy to France where it became a very influential political weapon. During the reign of Louis XIV (1638–1715) the practice of poisoning became so widespread that he set aside a *Chambre des Poisons* in which to try, and a *Chambre Ardente* in which to burn, convicted poisoners. The practice became a fine art, and persisted in France for a hundred years.

There are many accidental deaths on record due to food or beer contaminated with arsenic, and not a few of the pioneer chemists working in recent years on the separation or preparation of arsenic derivatives have come to harm through ignorance of its poisonous qualities.

It is not known who first reasoned that there might be something of good in this powerful poison and who daringly experimented with it as a therapeutic agent. About the middle of the eighteenth century there appeared on the market an alleged specific remedy called "Tasteless Ague and Fever Drops." In 1786 a London physician, by the name of Thomas Fowler, was led to investigate these "Ague Drops" and to formulate a solution which he considered to be a satisfactory imitation. This is called Fowler's solution to this day. This solution was recognized by the London Pharmacopoeia in 1809, and was extensively used in fevers, St. Vitus' Dance, chronic affections and pernicious anemia.

Moderate amounts of arsenic in any form appear to have a remarkably stimulating effect, leading to increased appetite, an increase in red-blood corpuscles, a gain in weight and a feeling of well-being. You have no doubt heard of the inhabitants of Upper Styria who through the continued ingestion of arsenic acquire a great tolerance for it. It is said that these Styrians possess remarkable physique and vitality as the result of its use, but the good effects are offset by ultimate injury and premature loss of these superlative benefits.

All organic compounds of arsenic are synthetic, with the exception of diethylarsine which is formed by certain moulds growing in the presence of arsenic. The first synthesis of organic arsenic is accredited by Morgan[2] to the French chemist,

Cadet, who, in 1760, separated arsenic from the mineral smaltite, or cobalt arsenide. Cadet's interest lay chiefly in the preparation of cobalt for the purposes of making "sympathetic" ink, but as a secondary matter he was led to experiment on the arsenious oxide which was a by-product from his invisible-ink manufacture. He heated together in a distillation flask arsenious oxide and potassium acetate and obtained in the distillate two liquids: a lighter fraction consisting, as Bunsen was later to show, of an acetone solution of the highly inflammable dimethylarsine (or cacodyl) and arsenious acid, and of a heavier liquid of dimethyl arsenious oxide. The latter possessed a remarkable stench resembling garlic, so unpleasant that Berzelius was led to name the parent substance, dimethylarsine, *cacodyl*, from the Greek for "foul odor."

Cadet's memoirs on this subject led to a detailed investigation by Bunsen in 1843, and they form the beginnings of what is to-day a very extensive field of the organic reactions of arsenic and the closely related element antimony.

The aliphatic group of compounds derived from dimethylarsine have not proved to be very important from a medicinal point of view, however, and I will therefore give them only slight attention here.

The synthesis of aromatic arsenicals was carried on for many years in the preparation of the dye magenta without knowledge of the discrete chemical processes involved. Magenta and other allied dyes are prepared by heating arsenious oxide and anilin together. In 1860 this process was made the subject of an investigation by Béchamp who noted that a mixture of anilin and arsenic acid does not give rise to colored products until a fairly high temperature (190–200°) is reached. At intermediate temperatures colorless products are formed, and it was in these colorless products that Béchamp was particularly interested. His investigations led him to conclude that the colorless product, which was afterward named atoxyl, was an acidic anilide ($C_6H_5NHAsO(OH)_2$) and so it was regarded until 1907 when Ehrlich and Bertheim demonstrated its true constitution. The latter investigators showed that at moderate temperatures the anilin arsenite undergoes a molecular rearrangement, the arsenic entering the ring in the para-position, giving rise to para-aminophenylarsenious acid.

I have already said that the use of inorganic arsenic dates back many centuries. The less poisonous organic combination, atoxyl, was first used in general therapy by Schild, Blumenthal and others in 1902. Shortly afterward Thomas and Breinl introduced atoxyl in the treatment of trypanosomiasis, or sleeping sickness. It also found use in the treatment of other tropical fevers, nervous disorders and anemia.

The specific causative agent of syphilis, the *Spirocheta pallida*, was discovered by Schaudin and Hoffman in 1905. On the strength of Schaudin's statement regarding the close biologic relationship between the spirochetes of syphilis and trypanosomes, Uhlenhuth was led to employ atoxyl in the treatment of experimental spirilosis in fowls, and, subsequently, in the treatment of human syphilis. Up to this time, syphilis had been treated by mercury and iodine. Though possessing a beneficial influence, atoxyl soon came into disfavor for human administration because of the digestive disturbances, nephritis and especially the impairment of vision which could be traced directly to its use.

It was then (1907) that Ehrlich and Bertheim made the discovery of the true chemical constitution of atoxyl, a discovery which indirectly led Ehrlich into the search for arsenic compounds possessing more powerful parasitocidal properties but lacking in the disadvantages of atoxyl.

The investigations of Ehrlich and his co-workers are too extensive to receive more than brief mention in this sketch. Attention was drawn to organic arsenic by the fact that it was much less poisonous than inorganic arsenic, it being possible to give forty to fifty times as much arsenic in the organic as in the inorganic form. It was from this low toxicity, in fact, that the compound atoxyl derived its name. Ehrlich, who had had exemplary training and experience in organic chemistry and who had long been interested in the behavior of living and dead cells toward various dyes, became interested in the use of dyes, and afterward of arsenic, in the treatment of experimental trypanosomiasis in mice.

He instigated in the Institute for Experimental Therapy, at Frankfort, a systematic procedure in the synthesis of organic arsenicals and the quantitative testing of these substances, first on experimental animals infected with trypanosomes or other protozoal parasites, and then on human cases. As you are well aware, a great many substances were tried out before the product of principal interest to us to-day—arsphenamine or salvarsan—was achieved. The first detailed report on the use of salvarsan was made less than three years after Ehrlich and Bertheim's discovery of the constitution of atoxyl.[3]

Arsphenamine and neoarsphenamine are not the only substances produced during these researches which had therapeutic possibilities, though they are undoubtedly the best. Among the milestones marking the endeavors of the Frankfort Laboratories must be mentioned arsacetin which received an extended clinical trial, and arseno-*p*-phenylglycine which also received clinical consideration and which was chemically a forerunner of arsphenamine. The chemical and pharmacological properties of these and other substances will be discussed later on.

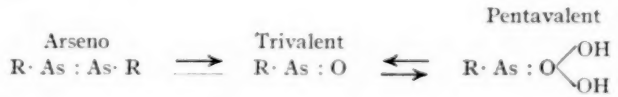
Antimony has not received as much attention from the professional poisoners as arsenic, but its legitimate use is certainly as old. Its introduction into therapy is supposed to have been made by Johann Thölde in the seventeenth century, who wrote under the pseudonym of a mythical fifteenth century monk, Basil Valentine. This pseudo-Valentine is supposed to have given to chemistry hydrochloric acid, sugar of lead, the means of preparing ammonia and sulphuric acid, and in a manuscript entitled the "Triumphant Chariot of Antimony" (1604) fastened the latter metal upon medical practice for centuries. He initiated the use of antimony in fevers, and recommended a mixture of antimony, lead and mercury for the treatment of syphilis. In the light of our present knowledge these prescriptions have considerable merit, for, as I shall point out later on, there is little difference in the essential therapeutic activity of antimony and arsenic in protozoal diseases. Tartar emetic was first described by Adrian Mynshicht in 1631, and its widespread use in typhoid and other febrile affections followed the curing of Louis XIV of a dangerous illness about thirty years later (1657).[4] I do not know how it was administered in those days, but certainly its merits must have contended with and overcome the disadvantages attendant on its administration by mouth, the only route by which it exerts its marked emetic action. Intravenous injection of drugs was introduced

about this time and perhaps this was an instance of necessity being the mother of invention.

The modern history of antimony is completely submerged by that of arsenic and it is on the latter that our attention is principally centered at the present time.

I have said that Ehrlich was a pioneer in the study of the behavior of protoplasm toward dyes and other chemical substances. The complexities of the phenomena which he observed led him, in an endeavor to explain and simplify these relations, to the postulation of his well-known "side-chain theory." He likened the protoplasmic molecule to a stable nucleus with many more or less unstable peripheral side-chains or chemoceptors, which enable it to combine chemically with food substances, toxins and antitoxins, dyes and other biologically reactive substances. Throughout his work on arsenic compounds, this chemoceptor theory played a very large part. As you will see from the experiments I am about to discuss, such an explanation of the toxic or therapeutic activity of various arsenic or antimony compounds is untenable. On the other hand I shall endeavor to illustrate how these differences in toxicity and therapeutic activity can be explained on a substantial chemical basis.

As you well know, arsenic and antimony can exist in chemical compounds in three states of oxidation, arseno, trivalent and pentavalent. These three states, or chemical conditions, can be represented by the following formulas, where R may be any organic radical whatsoever:



The transformation from left to right is a process of oxidation; from right to left a process of reduction. Under certain conditions arsenic may be present in all three forms, or in any one. The keynote to the biochemical phenomena associated with various arsenic compounds lies in the fact that this metal exerts a direct toxic action on living protoplasm only when it is in the trivalent-oxide state. In the more highly reduced arseno state, and in the oxidized or pentavalent state, arsenic exerts little or no toxic action on any form of life. These facts are equally true for antimony. Therefore it is not necessary, for general purposes, to consider the nature of the organic radical R with which the metal is combined. We need only note the degree of oxidation of the metal, *i. e.*, whether it is in arseno, the trivalent or the pentavalent state. All tissues, such as the blood and living cells, etc., possess some power to perform oxidations and reductions. Consequently when arsenic compounds are injected into the animal body, or even mixed with body fluids, alterations in the state of oxidation take place. Arseno arsenic is oxidized, first to the trivalent state, and then to the pentavalent state. The transformation from left to right in the graph is the easier, and is the predominant type of reaction taking place in the animal body. On the other hand it is known that when pentavalent arsenic is injected, small amounts are reduced to the trivalent state.

The pharmacological significance of these facts is illustrated by the rapidity with which various forms of antimony and arsenic produce symptoms of poisoning

after intravenous injection. When a lethal dose of the trivalent form is given, symptoms of acute poisoning appear immediately, *i. e.*, within one to five minutes, and death follows very soon afterward. If the animal survives one or two hours, it is very unlikely that it will die at all. When lethal doses of arseno or pentavalent arsenic are given, symptoms of poisoning do not appear for an hour or two hours, or even a day. Since these forms are not toxic, it is necessary, before they can exert any toxic influence, for them to be oxidized or reduced, respectively, to the toxic, trivalent oxide. This transformation is slow, and some time elapses before a sufficient concentration of the trivalent form is produced to cause acute injury.

A second fact of prime importance is that the reaction between a toxic arsenic compound and the parasites progresses in a smooth, definite way, just as does the reaction between two chemical substances. These facts are illustrated by the

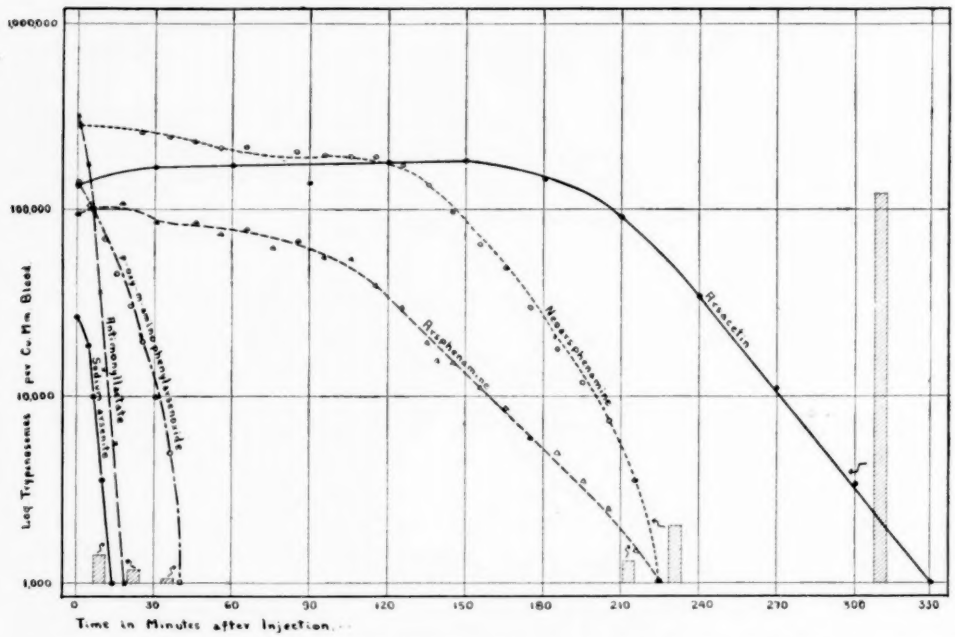


Fig. 1.—Rate of reaction between trypanosomes in the blood stream of white rats and various arsenic preparations when injected intravenously. Note the rapidity of action of compounds of the trivalent oxide type as compared with the compounds of the arseno and pentavalent type. The perpendicular rectangles indicate the actual amount of arsenic given in each case.

following experiments, quoted from some performed by Dr. Voegtlin and myself in Washington.[5] Various arsenic and antimony compounds were injected intravenously into white rats infected with the parasitic protozoön, *Trypanosoma equiperdum*. The number of parasites in the peripheral blood stream was determined at the beginning and throughout the experiment by drawing blood from the tip of the tail and counting the parasites in a given volume of blood, just as one counts erythrocytes or leucocytes. The trypanosomes are rapidly autolyzed in the blood stream after being killed by the drug, and hence the reaction of the drug

with the parasites can be followed very closely. A few "process curves," typical of various arsenic and antimony compounds, are given in Fig. 1. It can be seen from these curves that compounds of the trivalent type (antimony lactate, sodium arsenite and arsenoxide) react directly with the parasites, because the latter begin to disappear as soon as the drug is injected.

On the other hand compounds of the arseno type (arsphenamine and neoarsphenamine) and compounds of the pentavalent type (arsacetin and atoxyl) have no immediate effect upon the parasites whatever. Only after a long period of time do the parasites begin to disappear. During this early period when the drug is exerting no trypanocidal action, it is being partially oxidized in the case of the arseno compounds, or reduced in the case of the pentavalent compounds, to the corresponding trypanocidal, trivalent form. Only after the production of the trivalent form has proceeded far enough to yield a certain threshold value does it begin to exert a trypanocidal action.

The value of any substance for the practical sterilization of the animal body depends not only on its power to destroy the invading parasites, but also on its toxicity for the host. The ratio between the minimum dose effective to kill the parasites and the minimum lethal dose represents, as Ehrlich pointed out, the margin of safety to be expected in its use. Therefore it is interesting to compare this ratio for a few substances representing the three chemical types.

Sodium Salt of R · As : O	Minimum lethal dose.	Minimum effective dose.*	M. L. D. / M. E. D.
Arsenious acid	7.0	7.0	1
Phenylarsenoxide	3.75	0.75	5
Arsenoxide	10.0	0.75	13
R · As : As · R			
Neoarsphenamine	100.0	4.0	25
Arsphenamine	75.0	2.0	37.5
Arsenophenyl glycine	75.0	4.5	16.0
$R \cdot As : O \begin{matrix} OH \\ OH \end{matrix}$			
Arsacetine	750.0	37.5	20
Atoxyl	150.0	37.5	4
Arsenic acid	50.0	37.5	± 1

* M. E. D. = that dose required to just destroy all the trypanosomes present in the blood stream. All doses are given in cc of an arsenic equivalent solution per kilo body weight.

Both the M. E. D. and M. L. D. are lowest with the trivalent oxides; this is because these substances act directly on the trypanosomes and on the host with a minimum amount of waste through excretion. They are not suited for therapeutic purposes, however, because the dose required to destroy the last parasite approaches too closely to the lethal dose; the arsenic is readily oxidized to the inert pentavalent state and in order to maintain a sufficiently prolonged action to destroy the last parasites, a very large fraction of the lethal dose must be given. The pentavalent compounds are both least toxic to the host and to the parasites because so little pentavalent arsenic is reduced in the body to the trivalent state. The arseno compounds, on the other hand, are readily oxidized to the corresponding trivalent form, and hence the differences in both toxicity and therapeutic activity between the arseno compounds and the corresponding oxides are very little.

The ratio M. L. D. over M. E. D. is greatest in the case of arsphenamine and neoarsphenamine, bearing out clinical experience with these preparations. A number of investigators have found that on the basis of arsenic content, arsphenamine and neoarsphenamine are equally effective against trypanosomes, spirochetes, spirilla, etc.[5d,6] The minimal lethal dose for white rats is also approximately equal.[7,5d] But it has been frequently said that in the treatment of human syphilis, neoarsphenamine is inferior to arsphenamine. This may be a result of the peculiar chemical properties of the latter. The dominance of the basicity of the amino group over the acidity of the hydroxyl group renders the compound insoluble in a neutral or slightly alkaline medium. It is precipitated from solution at the hydrogen-ion concentration of the blood. It is therefore probable that arsphenamine is precipitated as such in the tissues after injection into the blood stream, resulting in the formation of depots from which small amounts are constantly being taken up by the blood, and converted through partial oxidation to the reactive trivalent oxide. There is evidence that minute quantities of the drug will exert a cumulative toxic effect on parasites infecting the body if maintained for a long period of time.[8] Hence this tendency to precipitate and thus reduce the rapidity of oxidation must be a great practical advantage. We should expect arsphenamine to be better adapted to sterilize the deep-seated lesions of human syphilis than the readily soluble, and hence more rapidly oxidized, neoarsphenamine. It is interesting to note in this connection that, so far as experimental trypanosomiasis is concerned, arsphenamine and neoarsphenamine are equally efficacious whether given by intravenous or intramuscular administration.[5e] Arsphenamine has been found to be equally efficacious, and neoarsphenamine slightly more efficacious, against the spirochete of recurrent fever in mice when given subcutaneously as compared with intravenously.[9] In the case of intramuscular or subcutaneous injection of neoarsphenamine, absorption would be slow and a depot, similar to that obtained by the precipitation of arsphenamine, would be established to maintain a long-continued attack on the parasites.

A very important practical point and one which has been much emphasized by Ehrlich is the ease with which protozoa can acquire resistance to arsenic and other therapeutic agents. Ehrlich showed that if the amount of drug administered to an infected animal was insufficient to produce sterilization it was very apt to produce resistance or even to stimulate the growth of the parasites and thus make the cure much more difficult than before. He therefore advised giving the largest dose practicable at the beginning of treatment. Almost every form of life can acquire tolerance to arsenic if exposed for long periods of time to non-lethal concentrations. Trypanosomes have been observed to acquire arsenic resistance simply through their propagation in the bodies of rats which had previously received arsenic.[5b] Spirochetes have been shown to acquire arsenic resistance by exposure to arsphenamine and neoarsphenamine *in vitro*.[10] That one-half a dose is not always one-half as good as a whole dose is evident from the fact that the minimum dose required to destroy all the parasites (*i. e.*, the minimum effective dose) is very sharply defined. Half this dose has almost no effect upon the number of parasites and successive half doses administered at intervals of 30 to 40 minutes have only a very slight additive effect. This is because the drug is rapidly being removed from the blood stream, either by excretion or by oxi-

dation to the inactive pentavalent form and consequently it must be supplied in a sufficient amount to furnish an excess during the time required to kill all the parasites. These facts show the practical importance of Ehrlich's idea of one sterilizing dose.

That antimony and arsenic act in very much the same manner on the parasites is indicated by the fact that one-half a dose of antimony and one-half a dose of arsenic will effect the destruction of the parasites while either half by itself has practically no influence upon them.

Ehrlich believed that arsphenamine was very easily destroyed by oxidation, a supposition which is borne out by subsequent investigation.[5c] The rate of oxidation bears a direct relation to the alkalinity of the solution, as the dihydrochloride, the form in which it is usually marketed, is not susceptible to oxidation by atmospheric oxygen. (This may or may not be true in the presence of contaminating substances which can act as oxidation catalysts.) As increasing amounts of alkali are added the rate of oxidation increases, being fairly rapid when the arsphenamine has been converted to the disodium salt. It is possible to demonstrate the formation of arsenoxide biologically as well as chemically because arsphenamine solutions containing it will exert an immediate destructive action on the trypanosomes when injected into infected rats. The rapidity of action of the injected solution increases with increasing time of incubation until the concentration of arsenoxide reaches a maximum after which the solution loses its therapeutic activity entirely as the arsenoxide is oxidized to the pentavalent form.[5h]

Roth[11] found that shaking alkalinized aqueous arsphenamine solutions with air for one minute increased the toxicity sixty percent, and shaking aqueous neoarsphenamine solutions increased the toxicity over four-fold. Therefore, care should be exercised that no more alkali be added in making arsphenamine solutions than is required to form the disodium salt, and that the solution should be exposed to the air as little as possible since an excess of alkali and aeration increase the rapidity of oxidation. Hunt[16] recently considered this question in connection with the untoward reactions frequently associated with the administration of arsphenamine. He did not find any toxic commercial preparations, the toxicity of which could be attributed to the presence of arsenoxide. He did find, however, that some preparations of arsphenamine are very toxic when the solutions are prepared at ordinary room temperature; the toxicity is greatly reduced by gently warming and in some cases by allowing the solutions to stand for a time at room temperature. Cold may preserve the toxicity for long periods. Hunt believes that the undue toxicity of such preparations is probably due to the physical state of the solution, and that this undergoes a rapid change when the solution is warmed.

Interest in pentavalent arsenic has recently been re-awakened by experiments with N-phenylglycineamide-*p*-arsonic acid on human trypanosomiasis.[12,13] Clinical experience indicates that when given in comparatively large doses it exerts a distinctly curative effect. Similarly there is promise of further investigations into the therapeutic possibilities of antimony derivatives.[14,15]

From what has been said it can be readily understood that arsphenamine owes its value in the treatment of human syphilis to a unique and fortuitous combination of physical-chemical properties. Its disadvantages are numerous, but we should not be too optimistic about avoiding them; it is not easy to alter the chemi-

cal nature of the compound without sacrificing something of this ensemble of physical-chemical properties which determine its efficacy.

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PREPARATION OF NEOARSPHENAMINE[1]

BY FREDERICK W. HEYL AND GEORGE E. MILLER.

With the progress of clinical experience with the arseno compounds the attention of the medical profession is becoming centered upon neoarsphenamine for the reason that with it fewer untoward reactions are experienced, and because it is less toxic and may be readily administered in practice.

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[1] Received for publication April 24, 1922.

Neoarsphenamine (sodium 3 : 3′ diamino-4 : 4′ dihydroxyarseno-benzene-N-methylene sulphinate) is the practical solution of the idea of Ehrlich for producing an acidic arseno derivative which would furnish a neutral water-soluble sodium salt. In Ehrlich's[1] work this thought stimulated the production of sodium arseno-phenyl glycinate, but this drug has been entirely supplanted by neoarsphenamine.

This product is unusually sensitive to oxidation. Roth,[2] in an article written for the purpose of improving the clinical technic used in preparing solutions for injection, showed that shaking aqueous solutions of neoarsphenamine in air for 30 to 60 seconds greatly increased the toxicity of the solution. A preparation for which the original tolerance was maximum, when shaken one minute, now failed to pass sharply the test at the minimum legally allowable. In other words the physician in one minute can oxidize the product to such an extent that he completely nullifies the advantages gained by the elaborate technique of the chemist.

In producing this substance it is impossible to consider the isolation of a pure compound, and the end product is the precipitated reaction mixture which, however, contains the arseno compound quite uniformly. The problem therefore consists in so altering the manipulations as to produce a mixture of the required arsenic content and of as low toxicity as possible.

The preparation falls into four steps:

(1) The preparation of the arseno-base.
(2) The condensation with sodium formaldehyde sulphoxylate.
(3) The precipitation, filtration and desiccation of the product.
(4) Ampuling.

The most important of these steps is 3. The ampuling is next in importance.

The preparation of the arseno base has been discussed[3] in the literature. Although too much stress is perhaps placed on the corresponding clinical significance of too great refinements in the rat test, it is a fact that carefully prepared hydrochlorides vary from 90 mg./Kg. to above 130 mg./Kg. These variations produce no practical differences in the resultant neoarsphenamine. With an aberrant sample of arseno base, the hydrochloride of which is tolerated above 130 mg./Kg. it is possible to produce a preparation passing at 360 mg./Kg. but we have observed samples prepared from average base (barely passing the test at 100 mg./Kg.) from which a "neo" derivative was prepared, which when injected at 360 mg./Kg. was tolerated by 50% of the test animals. In our opinion, therefore, the preparation of the base in the first step does not materially affect the toxicity of the final product.

The intermediate free sulphinic acid which precipitates almost immediately from solution when sodium formaldehyde sulphoxylate is dropped into the solution of the hydrochloride is remarkably uniform in composition. We conduct this reaction at 25–27° for 15 minutes. Elevating temperature or increasing time introduces the element of variability which can be observed in the undesirable deepening of the color, and in altering the composition of the drug.

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[1] *Ber.*, 42, 36, 1909.

[2] *Pub. Health Reports*, 35, 2208, 1920.

[3] Ehrlich and Bertheim, *B.*, 45, 756, 1912; Kober, *J. A. C. S.*, 41, 442, 1919; Christiansen, *Ibid.*, 43, 2202, 1920; King, *J. C. S.*, 119, 1107, 1921.

We come now to the technically difficult mechanical part of the preparation. These difficulties have been surmounted on the commercial scale, as is evidenced by the fact that the average sample to-day is tolerated by the rat in doses of 250 mg./Kg. whereas for the first importations this test was set at 90 mg./Kg. The problem consists in precipitating, filtering, and drying the enormously soluble reaction products without oxidation. A suitable apparatus for this is described in the experimental part, along with a description of the sealing and preservation of the drug in ampuls.

The work in this laboratory has been carried out starting with 25 or 50 Gm. of crystalline analytically pure nitro-oxyphenyl-arsonic acid. In this paper the apparatus is described for the smaller scale, making the directions suitable for laboratory instructions.

The results are summarized at the end of the paper.

EXPERIMENTAL.

1. *Reduction of Nitro-Oxyphenyl-Arsonic Acid.*

Into a separate wide-mouth 3-liter bottle, equipped with stirrer and set up in a water-bath, are placed 1500 cc distilled water. To this are added 65 Gm. crystallized magnesium chloride and then 375 Gm. sodium hydrosulphite (80%). To this is added a cold solution of 25 Gm. pure nitro-oxyphenyl-arsonic acid in 86 cc 2 *N* sodium hydroxide but diluted to 420 cc with water. We have added this rather rapidly (5 minutes), with stirring. The mixture is warmed to 30–35°, and following Kober's directions the dirt from the hydrosulphite is filtered off, through asbestos at A, collecting in the suction flask B.

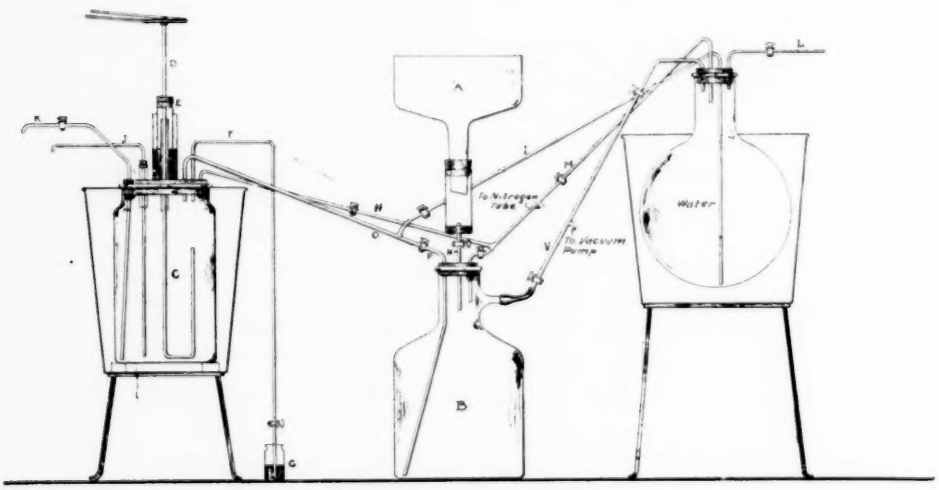

Fig. 1.—Reducer for Arseno-base.

Fig. 1 is a diagrammatic representation of an ideal reducer. The reducing chamber C carries a stirrer, D, with a large ($3\frac{1}{2}$") mercury seal at E. A safety tube, F, passes into a small mercury seal, G. The reaction mixture or air-free water can be blown in through O or I, respectively. J is a movable syphon for removing rinse water when washing the precipitated base by decantation, while K is the outlet for the precipitated base.

Beginning the preparation, the water flask is filled by opening L, closing M, I, and applying the vacuum at V. When filled, L is closed, the bath is heated and all air expelled by applying the vacuum. The bath is cooled and M opened to nitrogen.

All the rest of the apparatus is filled with water from A, it being necessary to blow it over into C through O, and this is all displaced by nitrogen which enters under pressure. The pressure from the tank is regulated so as to be related to the mercury trap at G.

It is into the apparatus thus prepared that the reaction mixture is filtered. A loss in yield is caused by delaying this step. By manipulating N, the asbestos can be washed out. The clear fluid is promptly blown into C and with a good arrangement not more than 5 cc is lost. The bath at C is at 45°. The stirrer is started, after raising J, and the reaction completed under nitrogen (H). The temperature is elevated to 55° in 10–15 minutes and then carried on for about two hours at this temperature. At the end of this time the stirrer is stopped and the base allowed to settle. The water from the bath is withdrawn. As soon as the base has settled out, the tube J is properly lowered and the supernatant fluid carefully blown off by closing the safety at F.

Thereupon after raising J, cold air-free water is blown in by opening F, and using I. The base is again allowed to settle, and the supernatant fluid blown off. This is repeated, and finally about 1 liter of water added. The base is thoroughly stirred and the suspension blown out at K, either into the filter (Fig. 2) or into a carbon dioxide filled separatory funnel. Where a permanent apparatus is not desired, this step can be simplified by taking the apparatus apart each time and inserting a wash-bottle arrangement which will work by gravity. For filtration of the base, with the exclusion of oxygen, we have found it convenient to combine filtration and desiccation in one operation, thus avoiding exposure. In most of our experiments the base was finally allowed to subside in a separatory funnel which was attached with the filter at A.

The cast iron filter and desiccator is shaped almost exactly like a large Frühling and Schultz desiccator. It carries two windows on the lid, and also in inlet tube B, carrying a ground-in stopcock at C. For filtering base we used one which was plated with German silver. The cast iron shell also carries a lower orifice, D, large enough to fit a No. 12 or No. 13 rubber stopper, E, and is controlled with a stopcock at F.

The shell also carries a gauge, G, and stopcock at H. This connects with the vacuum pump and a tank of air-free nitrogen or carbon dioxide. A shelf at I, I carries a lead-lined trough for drying agents and these are also placed in suitable vessels on the floor of the desiccator. K is a receiver for the filtrate.

The day before using this apparatus the Büchner is set in place (using a coarse alundum plate, or filter paper). Calcium chloride chiefly, with sulphuric acid and phosphoric anhydride are used for desiccation, and the cover is clamped evenly over the gasket L by means of six eye bolts, M. The chamber is evacuated to about 30 mm., and the bolts tightened down. This vacuum must hold until the next day, whereupon the chamber is filled with the inert gas. This is easily done by use of a Bishop and Babcock gas regulator at about 3 pounds pressure.

The connection at A being made, a vacuum is again prepared, evacuating the connections, and the apparatus is flooded with inert gas. H is then closed, a partial vacuum drawn by opening F, and the base is allowed to run into the funnel and filtration completed by opening F in a regulated way.

When finally a high vacuum is attained, F is closed and F and H connected with the pump for about two hours. After standing over night the quantities here used are dry. The apparatus is then flooded with carbon dioxide, and the base dropped into a weighed bottle. The yield in 40 runs varied from 13.4 Gm. to 16.0 Gm., averaging 15.1 Gm.

This arseno base contains 38.3% As.

$(C_6H_3(NH_2)\ (OH)As)_2$: Calc., As = 41.0

$(C_6H_3(NH_2)\ (OH)As)_2 \cdot 1^1/_2H_2O$: Calc., As = 38.2

The product is, however, probably a monohydrate (39.06% As), containing enough of the sulphonic acid derivative to lower the arsenic content. Theory therefore requires a yield of 18.25 Gm. The above yield is 83% of theory.

2. *Preparation of Arsphenamine.*

The base in part was converted into the hydrochloride. The solution of the hydrochloride was prepared in a 250-cc centrifuge bottle in which the base had been weighed. Upon it was poured a quantity of chilled methyl alcohol and a calculated quantity of 2 *N* methyl alcoholic hydrochloric acid. The mixture is kept cool in an ice bath and 3 Gm. charcoal are added and the whole is vigorously shaken under carbon dioxide until solution is complete. The solution is filtered through an alundum thimble (R. A. 360)* as described in principle by Kober.

The following table gives the reagents with various yields used in this series.

Base (Gm.)	13.5	14.0	14.5	15.0	15.5
2 *N* alcoholic HCl (cc)	36.9	38.3	39.6	41.0	42.4
Methyl alcohol (cc)	63.1	61.7	60.4	59.0	57.6

In the preparation of the hydrochloride the filtration (Fig. 3) is conducted by inserting the stopper bearing two tubes, A and B, into the bottle, flooding with CO_2 and then inverting and tightening the two-holed stopper C into the filter tube. B

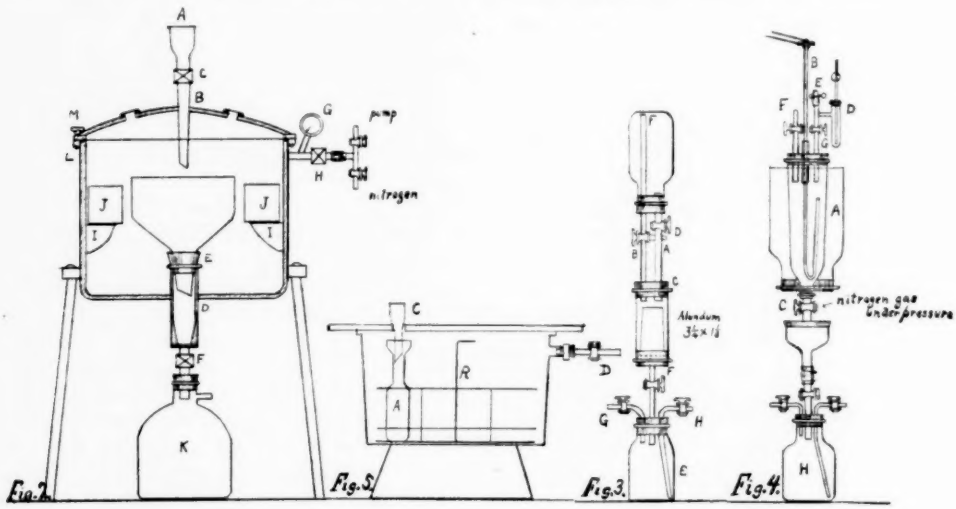

Fig. 2. Fig. 3. Fig. 4.

Apparatus for preparing, filtering and ampuling neoarsphenamine solution.

Fig. 2.—Filter and desiccator for 8″ funnel; Fig. 3.—Anerobic filtration of hydrochloride; Fig. 4.—For preparing "Neo" solution; Fig. 5.—Ampuling neoarsphenamine.

is a three-way stopcock. A bottle, E, is connected at the lower opening F. The apparatus is evacuated to 15 mm. and then flooded with CO_2 from a gasometer connected at B. The gas is then passed up into the top bottle and the solution filtered, CO_2 running in at the top as the fluid recedes. When the filtration is complete the upper bottle is removed, a small funnel put at F and 20 cc absolute methyl alcohol allowed to drop into the filter. The gasometer was then connected with F or B and the fluid drawn through.

By closing F, applying gas under pressure at G, this solution is slowly blown into the precipitating ether through H. For this purpose 1200 cc chilled absolute ether are poured into a 2-liter separatory funnel provided with a stirrer. Also carbon dioxide under pressure is bubbled up through the lower orifice to displace air. The alcoholic solution (0°) is dropped in during 5 minutes and the agitation completed in 3–5 minutes more. The stopped stirrer is raised from the fluid and

* This was washed and burned out in a muffle furnace each time.

CO_2 is stopped from below, while the preparation is well protected from air by the layer of supernatant ether.

The separatory funnel is now attached to the cast iron filter and desiccator. The top of the separator may be connected with a CO_2 gasometer, but this probably offers no advantages.

For this filtration the Büchner is supplied with a porous alundum plate (cemented in with a silica cement) over which a hardened filter paper is laid. The desiccator is charged with paraffin, $CaCl_2$, H_2SO_4 and P_2O_5. This filtration requires only a small part of the fluid to be run through as the precipitated arsphenamine separates readily. The precipitate is washed with 150 cc absolute ether, and dried for two days.

In this work the material was removed to a weighed dish and dried to constant weight *in vacuo* over P_2O_5, before ampuling.

The yields and toxicological findings are summarized in Table I.

The following are the results of 9 runs.

TABLE I.—ARSPHENAMINE DOSES IN EXPERIMENTS. MG./KG.

Sample.	% As.	Yield.	90.	100.	110.	120.	130.	M. T. D.
173	31.5	15 Gm.	.....	.....	+++++	+----	.....	110
174	31.0	17	+++++	++++-	+----	.....	.....	100
175	30.8	....	+++++	+++++	-----	.....	.....	100
181	30.2	13.5	.....	+++++	++---	.....	.....	100
182	31.1	15.8	.....	.....	+++++	+++--	.....	120
183	31.3	15.7	.....	++++-	++---	++-	++-	100
A 1	31.4	16.2	+++++	3L; 7D	++---	.....	.....	90
A 2	31.2	16.2	+++++	++++-	+----	++---	.....	100
171	30.8	15.5	.....	.....	+++++	+++++	+++--	130

Average tolerance = 105 mg./Kg.

These results indicate the significance of the 100 mg./Kg. test which is officially required. It is for all practical purposes a maximum value.

We experimented with Kober's method for precipitating the hydrochloride.[1] The method was followed precisely. The product is entirely different in its physical properties. It requires boiling water for solution.

TABLE II.—ARSPHENAMINE TESTS. MG./KG.

Sample.	% As.	Yield.	100.	110.	120.	135.
8	....	15 Gm.	13L; 2D	.....	.....	.....
9	...	14	5L;	.....	.....	.....
12	30.6	15	.....	.....	++++-	.....
10	31.2	12	.....	+++++	7L; 3D	+----

Estimated average, about 120 mg./Kg.

Although only a few experiments were conducted we are inclined to agree that the use of hydrochloric acid as a precipitant favorably affects the results of the rat test. Since the appearance of Hunt's[2] paper we felt that the continued agitation with hot water might have been a favorable influence in these tests. We find that it may increase the tolerance of an ether-precipitated sample by 10 mg./Kg. We note that the British Medical Research Committee[3] believe that the varying toxicity of different samples is related to differences in the physical properties of the product, which determine the state of physical dispersion in which the free base comes out of solution when the alkaline solution is injected intravenously.

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[1] *Loc. cit.*

[2] *J. A. M. A.*, 76, 854, 1921.

[3] Reports upon the Manufacture of Salvarsan and Its Substitutes, 1919.

We tested in duplicate two samples made by ether precipitation by making the acid solution with (*a*) cold water, (*b*) with hot water and agitation. These were neutralized as soon as dissolved and injected at 120 and 110 mg./Kg., respectively, with the following results:

Sample 173	hot	++++−
	cold	+−−−−
Sample 174	hot	+++−−
	cold	+−−−−

3. Preparation of Neoarsphenamine.

After this preliminary work we directed our attention to the production of a series of preparations of neoarsphenamine, using for the most part the filtered methyl alcoholic solution as the starting material for the condensation.

The condensation was carried out in the apparatus sketched in Fig. 4. The percolating cylinder A, fitted with a rapidly revolving stirrer, B, is flooded for some time with carbon dioxide or nitrogen gas from the 3-way stopcock C. This gas leaves through the trap at D and E, and when all the air is displaced the solution of the hydrochloride is let in at F. The jacket keeps this solution at 25–27°. It is agitated by the gas from below and the stirrer is started later.

This is followed by a solution of freshly recrystallized pure sodium sulphoxylate. Of this 11.6 Gm. are used for 14.0 Gm. base, and 12.4 Gm. where the yield of base is 15.5 Gm. The sulphoxylate is dissolved in a minimum quantity of water at about 50° C. This requires about 12 cc water. F is closed and the reaction allowed to run 15 minutes.

At the end of this time 10 cc water are added and this is followed gradually by the calculated quantity of 20% sodium carbonate solution (20.3 cc for 14 Gm. base to 22.5 cc for 15.5 Gm. base). This operation is a critical part of the preparation. It is necessary to keep the volume of water used small enough to facilitate the subsequent precipitation of the fluid, and yet large enough to dissolve the sulphinic acid. The above figures, although small and favoring the subsequent precipitation, usually yield a clear solution.

The stopcock F is now connected with a gasometer and the pressure is great enough to force the hydrosulphite liquor up the tube in D, and the fluid is filtered through asbestos into the flask H, which has been previously evacuated, after preliminary filling with CO_2.

The solution is now dropped with stirring into an ice-cold mixture (850 cc + 700 cc) of absolute alcohol (99%) and absolute ether, in an atmosphere of CO_2. The product precipitates quantitatively and the filtration is conducted as has been previously described for arsphenamine. The drying was carried out for 2–3 days and the product was passed through a No. 40 mesh sieve and dried to constant weight *in vacuo* over P_2O_5. This we consider of importance, as it desiccates the precipitated excess of sodium formaldehyde sulphoxylate and thus prevents the subsequent production of garlic-like odors and dampening of the product. This might be a factor in subsequent deterioration.

The product was transferred to large constricted test-tubes (2) which were evacuated to 15 mm. and filled with CO_2 and sealed.

From these test-tubes the product was ampuled as follows:

An 8″ Scheibler tubulated vacuum desiccator was equipped with a flat plate glass top which had an aperture bearing a No. 5 rubber stopper. This was equipped with a copper rack, R, holding 36 ampuls (A) (see Fig. 5). The rack is filled with sterilized ampuls, the aperture C closed and a vacuum drawn. This is filled with carbon dioxide. A constant positive pressure of the gas is forced in at D and the ampuls filled with weighed amounts, shifting the plate as

required. The cork is replaced, the filled ampuls again evacuated and refilled afresh with CO_2, and then maintaining a constant positive pressure of the gas the ampuls are lifted out one by one through C and sealed. We use soft glass ampuls to reduce possible exposure. The desiccator is charged with calcium chloride, and the gas used is air-free and dried through sulphuric acid.

In seventeen experiments under the vicissitudes of laboratory production the yields varied from 18 to 26 Gm. with an average of 23.5 Gm. or 75% of the theory calculated from arseno base. The arsenic content was controlled by dilution with sodium chloride C. P. when necessary. It varied from 18.0 to 18.7%. The average was 18.45% As. The M. L. D. varied from 200 mg./Kg. (2) to 300+ mg./Kg. (4) with an average of 255 mg./Kg. Since the maximum tolerated dose[1] is 346 mg./Kg. the discrepancy is about 90 mg./Kg.

In runs made under highly satisfactory conditions, involving a perfect desiccator, the maximum appeared to be more closely approached. These are listed in Table III.

TABLE III.—NEOARSPHENAMINE EXPERIMENTS. DOSES IN MG./KG.

Sample.	% As.	Yield.	240.	280.	320.	M. T. D.
177	18.5	23 Gm.	++++−	++++−	.....	280+
178	18.5	22	.....	++++−	.....	280+
183	18.4	18	.....	7L; 1D	6L; 1D	320+
185	18.5	21	.....	.....	++++−	320+
189	18.5	24	.....	+++++	−−−−−	280

Here an average of 300 mg./Kg. approaches within 46 mg./Kg. of a maximum value. While the average tolerance above mentioned of 255 mg./Kg. is somewhat disappointingly low, it should be pointed out that a series such as those given in Table III represents perfect technical smoothness with a quite difficult set of operations.

We carried out a few further experiments with the thought of cutting the time factor down to a minimum of 8 hours. This introduced other difficulties and is probably not feasible on larger scale. It is the better laboratory method for student work. To accomplish this purpose the base which separated by sedimentation was transferred to a 250-cc bottle and centrifuged instead of being filtered. The bottle was filled to the neck, covered, and the wet base, which occupies 65 cc, was obtained directly, about 1 P.M. The excess water was blown out with CO_2 and the base was taken up in 75 cc ice-cold methyl alcohol and solution was effected by the addition of 5.5 cc concentrated HCl. This solution was bone-coaled and filtered as before and the reaction conducted as described above, using a longer time for the condensation, 20–25 minutes.

With the additional water here present, it is necessary to precipitate the reaction mixture with a large volume (1800 cc) of absolute alcohol at 0–5° C. After sedimentation the product is filtered in the usual manner. Samples were diluted when necessary by the addition of the calculated quantity of C. P. sodium chloride.

The variations here are greater than in the method first described because of the great solubility of the product and the increased quantity of water. The toxicity is slightly decreased by this technique:

[1] Hart and Payne, *J. A. C. S.*, 44, 1922.

TABLE IV.—NEOARSPHENAMINE EXPERIMENTS. DOSES IN MG./KG.

Sample.	Yield.	% As.	200.	240.	280.	320.	M. T. D.
128	19 Gm.	18.2	+++++	+++++	+++++	+++++	320+
136	17	18.6	+++++	++−−−	.....	.....	200
138	20	18.5	.....	.....	++++−	+++−−	300+
141*	25	18.1	+++++	+++++	+++++	+++++	320+

Average tolerance = 285 mg./Kg.

* Failed at 360 mg./Kg.

All preparations on this small scale were very dry.

A determination of loss on drying at 78° in CO_2 gave volatile matter = 1.2%.

SUMMARY.

1. Two laboratory methods are described in detail for the preparation of neoarsphenamine.

2. The nature and dimensions of the variation in its toxicity action are compared with values previously reported.

3. Toward average samples, prepared by these processes, the rat shows a tolerance of 255 mg./Kg. Under particularly favorable manipulation this value approaches more closely to the maximum.

4. The increase in toxicity which results in the final steps amounts to 90 mg./Kg. for the average sample, but with perfected conditions we have approached within 45 mg./Kg. (*i. e.* M. T. D. = 320+ mg./Kg.).

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SOLUBILITY OF PHENOL IN LIQUID PARAFFIN.

Jules Cofman-Nicoresti reports experiments on the solubility of phenol in liquid paraffin, in the *Pharmaceutical Journal and Pharmacist* of April 29, 1922, p. 349. The conclusions the contributor draws from the experiments are as follows:

"1. The solubility of phenol in liquid paraffin at 15° C. is not above 1 percent.

"2. The quantity of phenol, exceeding 1 percent, dissolved in liquid paraffin by means of heat will, when cool, separate in a liquid, oily layer, which layer will occupy the lower part of the solution."

Further references made in the article are reprinted:

"Boemingham (*Exper. Cancer.*, December 8, 1921; see *P. J.*, Vol. 108, p. 298) points out the dangers of using liquid paraffin as a substitute for glycerin in phenol solutions. He mentions a case in which a young physician prescribed as ear-drops, for a boy of ten, suffering from earache, liquid phenol in liquid paraffin. A glass dropper was used to administer the drops; the pure phenol collected in the tip of the dropper and was injected in the child's ear, with the result that half the tympanic membrane was destroyed and the external meatus and the auricle very badly corroded.

"A similar case came before the law courts in a North town about two years ago. A prescription for ear-drops containing 6.2 percent of pure phenol in liquid paraffin had been dispensed by a pharmacist. The patient, after using half of the solution in the bottle (1 oz. bottle), complained of pains in his ears, and suspecting that the prescription had been wrongly dispensed, sent it to an analyst, who found 10.3 percent of phenol in the solution.

"An action was taken against the chemist for wrongly dispensing the prescription, and, in spite of the chemist's defense, the jury, apparently impressed by the analytical evidence, found for the plaintiff, giving heavy damages against the chemist with the result that the unfortunate pharmacist was sent to the bankruptcy court."

THE PLACE OF PHARMACY IN THE WORLD.

BY H. V. ARNY.

ADDRESS OF ACCEPTANCE OF THE THIRD REMINGTON HONOR MEDAL, MAY 15, 1922.

To reverently paraphrase a great saying: Before Science was Pharmacy is. I love to dream over the historic wealth of pharmacy; to think of our pharmaceutical progenitors amid the mists of the past. First there were priests of the Egyptian temples who prepared the medicaments; the writers of Eber's Papyrus. Then there were those in the Bible whom I wish to continue to consider as apothecaries even though the Revised Version calls them "perfumers." The one Solomon had in mind when he wrote of the fly in the ointment; the one who had the great, though unconscious, glory of preparing the precious ointment that the Magdalen poured upon the feet of her Lord and Master; the one whose name we know, Hananiah, the apothecary whose son helped Nehemiah to rebuild the walls of Jerusalem. Then I like to think of the pharmaceutical helpers of Dioscorides and Galen; of the seplasiarii of ancient Rome; of the medieval apothecaries of Nuremberg, whom Valerius Cordus had in mind when he prepared his Pharmacoporum Omnium. Then to the colonial apothecaries of our own land; to the druggists of the young Republic of 1822 and thence along through the nineteenth century, to that honored line of pharmacists, Procter, Parrish, Bedford, Rice, Maisch, Oldberg, Diehl down to my beloved teacher, that great man, Joseph Price Remington, whose kindly countenance adorns the medal just bestowed upon me, the face that I imagine greets his pupil with a smile of friendly recognition.

H. V. ARNY,
Remington Honor Medalist, 1922.

What lessons we can learn from these worthies of the past; these disciples of Service, these humble searchers after the Truth. For let us frankly admit that the pharmacist of the eighteenth century and earlier was an unassuming helper rather than a brilliant master. In ancient Egypt he was the assistant priest, in ancient Greece he was the doctor's pupil; in medieval Europe he was the lay brother; in Tudor England he was, to quote the quaint saying of William Bulleyn, "the physician's cook," and in Colonial America he was the small shopkeeper. But whenever and wherever he lived, he was a Man, a person whose passion was Service, whose motto was "Accuracy," whose virtue was Trustworthiness. Verily these cardinal principles represent a heritage more precious than a mere place in the Almanach de Gotha.

Moreover let us remember that up to the nineteenth century the only exalted personages were the nobles, the clergy and the warriors. In those days, the surgeon was also the barber; the author lived only as he basked in the smiles of his noble patron; the chemist was either a soap boiler or a practitioner of black art, the banker was usually a Hebrew money lender. It is therefore not surprising

that the pharmacist was little esteemed at court until Parmentier made the influence of pharmacy felt in the palace of the Fifteenth Louis of France. But any calling that has produced a Scheele, a Sertürner, a Pelletier, a Caventou, a Schlotterback, a Trimble, a Power and a Lloyd need not bow its head in the presence of the modern sciences; a calling that has developed the vast concerns headed by a Dieterich, a Wellcome, a Squibb, a Dohme, a Warner and a Seabury need not be considered insignificant when compared to other manufacturing enterprises; a calling that has been inspired by a Procter, a Prescott, a Markoe, a Searby, a Caspari and a Rusby need not be held in ill esteem in educational circles even though we have some pharmaceutical Jeremiahs who seem to think the contrary. When we come to the backbone of pharmacy, the great body of retail druggists such as Metcalf and Sheppard of Boston, Adamson and McIntyre of New York, Marshall and Blair of Philadelphia, Duhamel and Hynson of Baltimore, Ebert of Chicago, Alexander of St. Louis, Finlay of New Orleans, Jones of Louisville, Painter of San Francisco and New York and Holzhauer of Newark to say nothing of those who are still with us we will all agree that there is no class of retail merchants, who are of such vital importance to the community. To quote inexactly from Professor Beal, the retail druggist is more than a merchant, he is a professional man in the fact that he is

Remington Honor Medal Presented to H. V. Arny, New York, May 15, 1922.

the only retail business man who receives family confidences that must remain as inviolate as information imparted to the physician. And then there is no retail business in which such strong emphasis must be laid upon service as in Pharmacy. I might point out that the main difference between the management of a chain of corporation stores and the business of an individual pharmacist is that the former is financed with the primary object of making money for the corporation with service as a mere selling point; while with the right sort of an individual pharmacist service to his patrons comes first with the financial rewards as the necessary complement to his primal consideration. This last statement is not as fantastic as it sounds. Of course, all of us work in order to make a living; to acquire a competence. But the gulf that divides the worthy from the unworthy is this very question of service. Is one's aim to freely give of one's time with reward sure to follow; or is it to take all one can get and give as little as possible in return? Time will not permit me to cite examples of unusual service rendered by retail pharmacists but this has been the theme of a paper I published some years since (*Drug. Circ.*, 1914, 651).

I hope I have made a case for Pharmacy as an historic calling whose record of 4000 years of service is available to all of those who will only read it. But

how do we pharmacists of 1922 pass along the truth as concerns pharmacy? How well are we holding aloft the torch of pharmaceutical progress, with its flame brightly burning; ready to pass along to the generations that follow us? Sometimes I fear that in accordance with efficiency and progressiveness characteristic of pharmacy we have exchanged the torch of the poet for the Bunsen burner; an instrument of greater calories but of less luminosity. It seems to me that instead of letting our "light so shine," we are too unobtrusive in furnishing our calories to those whom we are benefiting; in short, that we are too modest in letting our achievements be known.

In this virile twentieth century the keynote is publicity. Unobtrusiveness is but a foolish way of letting another calling get the credit of our achievements. While we sit humbly back and modestly deprecate our achievements, our more energetic mother, Medicine, and our younger sister, Chemistry, have caught the spirit of the age and are letting the lay world know what they are doing; are doing work that we pharmacists should be doing; and if the truth be told are appropriating to themselves some of the achievements of us pharmacists.

Is this statement extreme? Let me give some illustrations of what I mean. Scheele, Sertürner, Pelletier, Caventou and other pharmacists of the past whose names are linked with their great discoveries in phytochemistry are usually classed in non-pharmaceutical literature as chemists.

In the same way those great pharmaceutical research workers of to-day, John Uri Lloyd and Frederick B. Power, are proudly claimed by our chemical brethern.

In a cabled news item that appeared in the American newspapers of a year or so ago the eminent Professor Bourquelot, head of the l'Ecole Superieur de Pharmacie of Paris, was cited as biologist.

Our own Dean Rusby is claimed by medicine on one hand, and on the other hand the expedition which he has recently conducted through South America with such brilliant success is considered as a botanical achievement by our friends of that calling. Amusing and yet irritating it is, that the early newspaper accounts of the undertaking dubbed the well-known pharmaceutical manufacturers of Philadelphia who financed the undertaking "a chemical firm."

In the list of research grants, research fellows and research medals published by the National Research Council, those relating to pharmacy are classified among the medical subjects, and the same thing is true as to the catalogues of certain publishers where books of pharmacy are listed in the sub-head "pharmacology."

During the war by special invitation a certain college of pharmacy sent one of its faculty down to Washington as a civilian expert on the subject of protective ointments against mustard gas. The gentleman worked on the problem during the four or five months and perfected the ointment that was adopted by our army. In the newspapers of a later date, the research was described as an achievement of the Chemical Warfare Service.

Lastly, while our newspapers employ as juicy morsels the occasional misdoings of the retail druggist, they are usually silent as to their virtues. Others get the credit for the narcotic legislation that druggists have placed upon the statute books to their own inconvenience but for the welfare of the public. Few realize the honest straightforward way that a vast majority of pharmacists have assumed the grave responsibilities that have come to them under the Eighteenth Amendment.

Those who have patiently listened to me thus far may be asking themselves "What has all this to do with the Remington Honor Medal?" It has this much to do with the subject, if I may be allowed to abruptly turn to personalities.

To me has been awarded the Third Remington Honor Medal—a badge of distinguished pharmaceutical service. Far be it from my thoughts to question the wisdom of eminent jury of award, the past-presidents of the American Pharmaceutical Association, but in taking inventory of my own modest achievements it is not as easy to see why the great honor fell upon me in 1922, as it was to understand why the first medal was awarded in 1919 to James Hartley Beal and why the second medal was awarded in 1920 to John Uri Lloyd. The medal of 1919 went to Dr. Beal as the pharmacist in legislation; for no man during the last thirty years has done more to formulate the legislative status of American pharmacy than has our friend from Scio, Ohio, and Urbana, Illinois. The second medal went to Professor Lloyd as we still love to call him as the pharmacist in research; for it is no disparagement to other distinguished pharmaceutical research workers to say that Lloyd, pharmaceutical manufacturer, author and scientist, is the brightest jewel in the research crown of American pharmacy. But the third medal and its recipient? This is another matter. Some of my friends have referred to my versatility, but versatility is not enough to bring this supreme honor. Some have been good enough to refer to my capacity for performing work, but service, not mere work, is the standard set for the award of the Remington Honor Medal. May I therefore be pardoned for taking this unique opportunity in my life to dare to venture the hope that the Remington Honor Medal Committee chose me in this Year of Grace 1922, because of my humble efforts toward solving the problem that I have chosen as the topic of my address, The Proper Place of Pharmacy in the World?

I hope I have proven my contention that pharmacy is more than an ancient calling; that it is more than a humble service. I hope I have shown sufficiently clearly that as a science, as a field of service, as a profession the followers of pharmacy have proven their worth.

But that is only half of the battle. We know these facts to be true, but have we impressed them sufficiently upon the world around us; have we, in truth, absorbed these facts ourselves? I find too often that our pharmaceutical manufacturers turn to chemists untrained in pharmacy for a solution of their problems. I find at times our pharmaceutical educators sneering at their own colleagues in pharmacy and lauding the achievements of those working in other fields of scientific and educational endeavor; I find some of our younger pharmacists so ignorant of the possibilities of pharmacy that they are frankly desirous of embarking in other lines of scientific or professional endeavor.

All of these conditions so detrimental to pharmaceutical progress are due to a lack of proper illumination. I have asserted that in our modesty, we pharmacists have not properly set forth our right to recognition as a science, as an art and as a profession.

I have endeavored during my twenty-five years of teaching to impress upon my students the fact that pharmacy is something more than the mere making of a living. I have tried during the last ten or fifteen years in my various A. Ph. A. activities to emphasize that pharmacy has a distinct place in the world of science as

well as in the world of service and that it was the duty of every true pharmacist to maintain pharmacy's proper place in the world. I have on sundry occasions pointed out how these things can be done and at this time I will summarize what I regard as the proper means; many of them, by the way, being the methods used satisfactorily by the followers of our mother, Medicine, and our sister, Chemistry.

1. We Pharmacists Must Stick Together.—There are too many of us flirting with medicine and with chemistry rather than devoting our best efforts to our own calling.

2. We Should Give Our Financial Aid to Projects for the Betterment of Pharmacy.—Those of us who have means should bestow it upon our pharmacy colleges and upon our pharmaceutical research undertakings.

3. We Should Develop Better Facilities for Acquainting the Public with the Achievements of Pharmacy.—It was my good fortune to organize a national committee on pharmaceutical publicity and during the past year it has been doing excellent work under the leadership of its accomplished chairman, Dean Robert P. Fischelis of Newark. I might, however, point out that Dr. Fischelis has had at his disposal less than $1200 per annum whereas the annual publicity appropriation of another American scientific society averages about $12,000. Such meritorious work as our publicity efforts should receive better support.

4. We Should Do More Research Work Ourselves or Should Give More Encouragement to the Research Work of Others.—In other addresses (JOUR. A. PH. A., 9, 684; *Pharm. Era*, 54, 236) I have discussed the subject of pharmaceutical research at length and I hope to have satisfactorily demonstrated the fact that even as a selfish proposition, pharmaceutical research should be encouraged by all who make their living out of pharmacy. It is now my task to organize a national committee on pharmaceutical research and while the organization will not be effected until the time of the Cleveland meeting of the A. Ph. A. I can now say that it is my earnest hope that at that time the several agencies interested in pharmaceutical research may come to a common agreement that will be of marked benefit to the whole of pharmacy. In the meanwhile there is much left for individual pharmacists to do in this direction. The only American endowment for pharmaceutical research now extant is the $16,500 of the A. Ph. A. Research Fund, the net profits from sale of the National Formulary. This fund, which should be augmented by outside contributions, provides at present $360 per annum for research grants and has been and still is of distinct service to those performing research. But we should go further. Every teacher in a college of pharmacy should be expected to perform some research work. In every college of pharmacy, provision should be made for the maintenance of at least one research fellow.

5. We Should Give Better Support to the Scientific and Professional Work of the American Pharmaceutical Association.—Practically all of us here present are members of that great organization—the American Pharmaceutical Association. Few of us appreciate the fact that it is among the oldest of America's national professional organizations. Thus, while the venerable Franklin Institute dates from 1824, the American Medical Associaton and also the American Association for the Advancement of Science from 1848, our own organization will celebrate its seventieth anniversary at its Cleveland meeting next August, while the American Chemical Society will have its semi-centennial in 1924.

We should do more than be merely members of the A. Ph. A. We should give to it, our time, or means; yea even our prayers. How many here present know practically the last words of that great pharmacist, Albert E. Ebert, were words of affection for the AMERICAN PHARMACEUTICAL ASSOCIATION? Each of us should consider himself (or herself, since women have ever been as welcome in the A. Ph. A. as men) a committee of one to bring new members into the A. Ph. A. Each of us should aid our great JOURNAL in securing more advertising patronage. Each of us should feel a personal responsibility in aiding the project of our A. Ph. A. Headquarters, of erecting a building that will tell the world of the dynamic power of Pharmacy.

And then there is the A. PH. A. YEAR BOOK. Of course I cannot close this address without a reference to my early pharmaceutical love "the Handy Black Volume." Since I was a young man in a southern drug store, I have drawn much of my inspiration from the old A. Ph. A. Proceedings and their successors, the Year Books. When the call came to me to carry on the great task of editing this magnificent work, a task to which my venerated friend, C. Lewis Diehl, gave a greater part of his life, I assumed the position as a duty to pharmacy. I have been glad to perform this duty during the past six years and as I have worked upon the successive annual numbers I have realized as I have never realized before the great work that the A. Ph. A. has been performing all of these years in furnishing to pharmacy, not only of America but of the world, this pharmaceutical library in one volume per annum. Few but those in charge of the affairs of the A. Ph. A. realize in what high esteem the YEAR BOOK is held by pharmaceutical savants the world over. Few appreciate the sacrifices made by the A. Ph. A. in keeping aflame this torch of American pharmaceutical progress. In this endeavor, the A. Ph. A. should receive the support of all other pharmaceutical agencies of our country.

Enough, perhaps more than enough, has been said by the recipient of the Third Remington Honor Medal. In closing, he wishes to give his hearty thanks to those who by their ballots selected him for this supreme honor, to those, his friends of the New York Branch who planned this delightful evening and to those from neighboring cities who have come to spend with him the greatest evening of his life. May he leave with all present the thought with which he began this address; that since the dim ages of the past, pharmacy has been a calling of unselfish service and that to-day and into the dim reaches of the future it will continue a means of service, a useful art and a valuable division of science, if we pharmacists will only rise to the possibilities of our calling.

SOME FUNCTIONS OF BOTANY IN THE PHARMACEUTICAL CURRICULUM.*

BY E. E. STANFORD.

Botany, as a science, had its origin with the beginnings of medicine and pharmacy. Botany, in its observational and experimental phases, dates even further into antiquity. All man's woe and weariness, says tradition, are the fruit of unfortunate

* Read before annual meeting Minnesota Pharmaceutical Association and Northwestern Branch, A. Ph. A., February 1922.

early botanical adventure. How many gaps in the cave man's family circle may have been caused by unwise adventure with the Neolithic flora? Was the man of Neanderthal cut off in his prime by the luscious-looking berry of some prehistoric Atropa?

Early botany, medicine and pharmacy were almost synonymous. From Dioscorides, and the forgotten fathers before him, to the present century, almost, the triumvirate held close union. Modern medicine, wisely or not, has largely severed partnership with the vegetable science. Some form of botany, however, still maintains its position in most if not all of our pharmaceutical curricula. In this modern age of proprietary, of wholesale manufacture, of ubiquitous (would that they were) governmental inspectors, is this survival justified? Is this practice, founded when the apothecary brewed herbs from back-yard garden or nearby woodland, a survival of fitness or an obsolescent fossilism which in our modern specialization we should accord but a decent burial in this time when the druggist never sees the growing plant whose products stock his shelves? Built on technicalities, as science must be, is it but a skeleton of outworn technicalities which might well give place to some study more practical on the one hand, more cultural on the other?

What, then, is botany, and where does it find its basis? Our student, in that crucial moment of his career which decides his possession of an engraved certificate and the licensure of his profession, may define it simply as "the science of plants," and thus add a point or two to the hard-won total. If botany to him is this, and nothing more, then might we who teach the art best throw our dusty volumes into the darkest library corner and renounce our unearned stipends to endow a professorship of ornamental inks—a chair of show-card writing. If our lore be but the prattling of technicality—the rattling of dry bones in a drier valley of dusty jars and dustier definition—then let us pass, assured that our passing will be unregretted. If, to ourselves and to our students, our botany be a science of observation, a basis of accurate comparison, an open door to original power of thought and of action, a gateway to the measureless breadth of biological concept, an introduction, to the gifted few, to the infinite field of living research, then, and only then, may we boldly claim no secondary rank in the van of modern education.

What, then, is observation, that we should value it? It is the power to *see* necessary or momentous things that concern our life and its interests, to perceive their details—the meaning, moment, and relationship of those details, and their correlation into a whole. It may be, in large measure, contingent on interest, on evident relationship to the well-being or happiness of the individual observer. Some men see in terms of nations—of races; some in terms of universal space and of constellations. Some see in terms of atoms and of electrons. Some see in infinities; some in infinitesimals. Each, in the sphere of the other, might be a failure. Yet common to all ranks, to all who in the forefront of their own chosen life work would leave life richer than they found it, must be this basal power of observation—this power for the necessary moment to focus all perceptive senses intelligently on any thought or any thing which occasion may require. If we consider the pharmacist merely as a technician—a technician, be it remembered, on whose technique the lives of other men depend—can we overrate the importance to him of a highly developed, intense command of the power of observation?

Does our modern environment of the young—our hurried secondary smattering of hasty rhetoric, hasty history, ancient and modern, hasty pursuit of dead languages slain twice again by haste—our modern vicarious recreation by hasty pictures of the trials and passions of a lifetime shot in breakneck brevity on the screen—our hasty mad cheering of physical convolutions of the hired men of the diamond, earning more than a university president's salary apiece—does all this develop observation, perception, concentration, capacity for steady, continuous, painful effort of any kind?

How far have our students, as we get them, developed a power of observation which can be concentrated on a thing which, for the moment, does not particularly interest them? No single test will show. Some, however, are indicative. Take a dozen students from any entering college class. Ask them, without special caution, to copy—not memorize, but simply copy—a dozen unknown terms of more than average difficulty—a dozen official Latin titles, say. How many, judging from the result, could—or would—copy a simple prescription with letter-perfect, absolute correctness? Take the bulb of a common onion—a simple subject in gross morphology, if such a thing exist—and ask your dozen students to draw it with accuracy. Nature drew the fibrovascular bundles—the ribs, to use more common language—from apex to base with an accuracy almost geometrical. How many of your chosen dozen will depict an object striped parallel-wise like Old Glory hanging downward? Try it and see! How many of the same or any other dozen would draw the simple leaf of the apple or maple without projecting the veins, like aberrant trichomes, somewhere over the edge? Lack of observation? Carelessness? Which is cause? Which effect?

How may botany, taught as a science, develop this power of observation? One recalls an old term—an unpopular term in any connection now—which used always to be used in definition of science—discipline. One thinks of Agassiz, greatest of teachers, who spent a term or a year on the details of a single fish, on that single basis laying the foundations of careers of research and service. The great master lived sixty-seven years. How long could he have stood the "pep" and "hustle" and "jazz" of to-day? One wonders.

For a professional training one could perhaps draw no brief for such super-intensive system. But a training for any profession must begin with some intensive discipline in the seeing of common things. The practice, old as the science and new as its needs, of careful drawing here lends its aid. There is a world of mental and physical discipline in the accurate depiction of a simple complex like a root or stem or leaf.

As to comparison: In comparison observations meet, mingle, adjust and perfect themselves. If objects in botany be seen, or drawn, with reference to themselves alone, with no noting of similitude and difference, no reasoning as to the *why* of resemblance and divergence, our observational beginning, valuable as it is, is a beginning only. Comparison must follow observation as night follows day. Accuracy, born of observation, perfects itself in comparison.

What of initiative? We read; we memorize the labor of other brains. We think the thoughts of other minds. We reap in peace the fruit of other men's pain. And it is well that we do. All progress bases itself on the past. To-day is built on yesterday. Structures of to-morrow must be founded to-day. But no educa-

tional scheme can be a well-rounded success unless it develops in a definite way on the foundations of observation and comparison the ability to think and do for the self.

The operations of the botanical laboratory, even of the compound microscope, or of the outdoor work and garden which should be an obligatory part of a botanical course, are simple, yet exact. The conclusions to be drawn through observation, comparison and operation are not always simple, not always obvious. Who is to do the thinking, who expend the mental effort, that derives complex truth from fundamental simplicity? How often, in desire to teach, to express our outlook, valued because it is ours, in desire to secure rapid development in the student who is ours for so brief a time—how often do we teach facts and words merely? How often, by endless repetition, by constant quizzing, by tireless though weary minuteness of supervision, in our desire to get something expressible in grades of figures as an earnest of progress in whatever specialty our work may lie—how often by a thousand well-meant, ill-planned means do we step in and dwarf and cripple and hinder our charges' necessary self-development?

That biological outlook. Where does the "barefoot boy" of to-day get his concept of the workings, of the ramifications, of nature? The "bending orchard trees" of his disrespected rural grandparent have for him been replaced by a pushcart. "A primrose by the river's brim" is not a primrose even; if he classify it at all, he may name it vaguely a dandelion. When a teacher has been asked, in all seriousness, "Which grows on the outside of the tree, the wood or the bark?" he begins to realize—or try to realize—the modern biological concept of the city-bred youngsters who swarm into our schools. Where may such a student, himself a living organism, learn the basic laws that govern life as we know it—the fundamental functions, adaptations, and nature of the living thing, be it plant or animal? In all our pitifully brief pharmaceutical course, where else but in the study of botany? Not in laboratory or lecture only, though neither must be neglected, but there are times in the botanical course where a single trip in a city park is worth a dozen inside periods, and a half day in even a rudimentary pharmaceutical garden worth a hundred.

What of research? The world to-day is one vast research laboratory. Our sciences in a day have sprung from the darkness of a million yesterdays. To-morrow—never may it have been so well said that we know not what the morrow may bring forth. And if in the bringing forth of things and thoughts that make tomorrow's world nobler and fairer than to-day's, students of ours may bear a part, if in the dawning sunlight they see clearly where our vision is but veiled, if new discoveries which make the pains of illness lighter and the burdens of life more easy to be borne, may owe their inspiration to toil of ours, then may we who teach a living science rest assured that our science and its interpretations have proved their worth to pharmacy and to the world.

THE DEPARTMENT OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

PROGRAM FOR THE ANNUAL MEETING OF THE CONFERENCE—1922, AT CLEVELAND, OHIO.

The Chairman of the Executive Committee of the Conference is at work upon the program for the next annual meeting which will be held at Cleveland, Ohio. He feels that the annual meeting of the Conference should be something more than an attempt to merely clear off the routine work of the Conference and the reports of committees.

He feels that one of the weakest points in our system of educational work is the lack of library facilities and our inability to use what we have to advantage. He is quite sure that were he to visit the schools belonging to the American Conference of Pharmaceutical Faculties to-day and should ask to see the institution he would be more frequently directed away from the college library than he would to it. In other words, not many of the Conference schools would be proud of their library facilities.

It is a well-known fact that pharmacists are not readers, and the average pharmacy student shows contempt for reading and does just as little as he can. It is certain that we cannot become progressive in our efforts until we do become readers of our own literature, as well as that of related and more general subjects. The Chairman of the Committee, then, would welcome any papers upon the subject of libraries and library work, to be included in the Cleveland program.

Another matter which must be stressed at this time is the matter of practical dispensing experience. There seems to be a feeling just at this time among board members that the college of pharmacy and not the drug store is the place where a man should get actual experience in compounding. While this feeling is in the air it is very important that we stress methods of improving the teaching and giving experience in prescription work. The chairman will appreciate papers from anyone upon this subject.

He further asks for suggestions from everyone as to how the next Conference program may be improved. The 1922 meeting should be the most profitable that we have ever had.

Dean Rudd of Virginia has recently called the attention of the Chairman to the fact that students are failing in one Conference school and then going to other Conference schools and continuing their studies uninterrupted. He has made the suggestion that the time has come when no Conference school should accept a student from another Conference school without a complete transcript of studies completed in the school from which he comes. Some Conference schools are already requiring this to be done but there are others that are not and it is becoming an annoying matter. This will come up for discussion, and if there are other questions of an executive or teaching nature that should be discussed in the coming meeting, the Chairman hopes he will be informed at once.

RUFUS A. LYMAN,
Chairman of the Executive Committee.

ADDRESS OF THE PRESIDENT, WILBER J. TEETERS.*

A review of the history of the American Conference of Pharmaceutical Faculties is of value, for each meeting furnishes a cornerstone from which to measure progress.

President Rudd and his predecessors have given very comprehensive reviews and I shall take for granted that you are familiar with these reports. No argument is necessary, I take it, to convince you that progress has been made along educational and other lines. Too much progress possibly for the ultra-conservative and by far too little for the distinctively progressive.

* Delivered before the 1921 meeting of the American Conference of Pharmaceutical Faculties, New Orleans.

With your permission, I prefer to take up a few of the problems that have to do with the future of pharmacy and the work of the colleges. To my mind the most vital problems of the Conference have to do with internal development of the colleges themselves. If this is carried out some of the problems that have bothered us in the past will take care of themselves. I wish to state at the beginning that I have always been a progressive but have honestly tried to be fair and have endeavored to see both sides of all questions.

I have heard the arguments pro and con in all the meetings of the Conference with but one or two exceptions, and am thoroughly convinced that there is a lot of human nature in this world. It appears that most of us are interested in and are working for the things that we think will benefit us personally or our particular institutions.

I have often wondered if the day will ever come when we, as a Conference, can work, vote and decide what is the right thing for pharmacy as a profession and leave self and the almighty dollar out of the question. I have the highest regard for pharmacy as a profession and the men connected with it as a whole, but a review of the Proceedings of this Conference reveals some things that some of the prominent members of the Conference ought to wish could be erased. I have no respect for the man who is not sincere in his expressed convictions.

We might just as well use every-day, ordinary horse sense and come to the general and united conclusion that if pharmacy is to progress as a profession it will have to move forward with the advance of general education. Arguments not supported by facts, and resolutions do not convince anyone that pharmacy should be recognized as a learned profession. The camouflage is too thin. Pharmacy will take its rightful place only when the final qualifications are up to university standards. This means high school graduation for entrance, and university requirements for graduation, with this three-day-a-week combination course eliminated. The Conference goes to high school graduation in 1923, but this is too late by several years to save some of the respect for pharmacy that should belong to it.

LIBRARIES.

The work of many colleges could be strengthened and improved by better libraries and better library facilities.

A few of the colleges have most excellent pharmaceutical libraries and adequate library facilities. Among these should be mentioned the Philadelphia College of Pharmacy and the Massachusetts College of Pharmacy; also belonging to this class are most of the colleges in connection with state universities, but not all.

A satisfactory pharmaceutical library should be considered as essential to the school equipment as apparatus is, and it should include the current drug journals and bound volumes of the same, both American and foreign.

I well remember being sent by this Conference a few years ago to make an investigation of a college that had made application for membership. I asked to be shown the library and imagine my surprise upon being shown a copy of the United States Pharmacopoeia, ten years out of date, and a copy of "Remington's Practice of Pharmacy." We all admit the value of these books but they do not make a complete library in themselves.

Books are an important item not only in institutional equipment, but are absolutely necessary for the personal equipment of the faculty. It takes money to buy books and every budget should have a liberal yearly allowance for books. When the work of the pharmacy colleges is extended to three years, I hope that the Syllabus Committee may include a library course which, among other things, will teach students how to use a scientific and reference library to advantage.

DRUG GARDENS.

Drug gardens are being conducted in connection with several colleges of pharmacy. The demand during the world war for drugs that had been grown commercially only in Europe was the primary stimulus for drug gardens in connection with colleges. The work has proved interesting and profitable, and at a few institutions it has reached the stage of commercial proportions. The work of the University of Minnesota College of Pharmacy on digitalis and the supplying of assayed tincture for army use, and the work of the College of Pharmacy of the University of Wisconsin in volatile oils are worthy of special mention.

Drug gardens should be used as a practical laboratory in connection with the work of colleges of pharmacy in the departments of botany and of pharmacology.

ENDOWMENTS.

A short time ago the press carried the story that Amherst College at its centennial celebration had present almost three thousand out of its five thousand graduates and former students, and that they completed the three million dollar endowment, two million five hundred thousand dollars of which was raised in four days. The loyalty shown for some of our colleges and the apparent ease with which they put over vast endowment funds are truly astounding.

Attention is called to this, for the future of pharmacy, as far as private colleges are concerned, will be determined largely by endowments of some form. The tuition paid by students no longer is adequate to cover the expense of a pharmaceutical education. Moreover the tuition in most state institutions is merely a nominal sum and the deficit is absorbed by the state. In private institutions a different problem of trying to break even is presented, and can be met only by cutting expenses, which results in either inferior and inadequate equipment or inferior teaching (low salaries) or both. Very few colleges of pharmacy have been fortunate enough to receive large endowment gifts. What will be done in the future no one can tell, but large gifts do not seem to be moving that way.

The Massachusetts College of Pharmacy, principally through the generosity of one man, has secured what is without question the finest and best building devoted exclusively to pharmacy in the United States, if not in the world. The Philadelphia College of Pharmacy, the pioneer in America, has this year celebrated its centennial, and the authorities are conducting an endowment campaign for two million dollars. It would seem that if their alumni and former students are as loyal as the alumni of private literary colleges are, they should be successful. Philadelphia is the oldest college of pharmacy in the United States and has had an honorable record. We hope the endowment plan will be successful.

FACULTIES.

Too little attention has been given to the personnel of the faculties, and in many cases the salaries are inadequate to secure the best talent. The time is here when

the major subjects in pharmacy should be taught by full-time professors and the renumeration made adequate. Time should be allowed for research to those capable of doing research work, and conditions in general altered so that side issues are not necessary in order to live respectably.

I recommend, therefore, that this Conference go on record as favoring full-time professors for major subjects and adequate salaries. Boards of education, regents or directors ought to be convinced of the importance of this forward step, and action by this Conference will be the means of calling their attention to it.

STANDARDIZATION OF COLLEGES.

The question of an investigation looking to the standardization of the colleges has been under discussion for a long time. In the beginning little was done more than to discuss the subject, for it was evident that some did not care to be classified. Sufficient time has been given to adjust conditions and an urgent appeal was made last year to the Carnegie Foundation, but it is evident that this work, if carried out reasonably soon, must be done by the Conference itself.

Nothing that we could do would advance the work of legitimate pharmacy schools more. It would separate the sheep from the goats. It is time to know what the actual standing of every college of pharmacy happens to be. I recommend, therefore, that this Conference pay for such an investigation, and that the result be published in full, and that the expense be pro-rated among the members of the Conference.

CONSOLIDATION OF PHARMACY COLLEGES.

An absorption or consolidation of pharmacy colleges has been slowly but steadily taking place. The results are for the betterment of pharmacy. I predict that many more changes of this kind will take place in the next few years. Readjustments must take place and are but natural to expect; especially will this be true as requirements and higher standards of teaching are demanded, for colleges must compete for talented men with commercial institutions, to a certain extent.

The university atmosphere of culture and refinement may do a lot to hold good men for a time, but the salary must approach, at least in a measure, a man's earning power along other lines.

A number of changes have taken place within the membership of the Conference, namely, Medico-Chirurgical absorbed by the Philadelphia College of Pharmacy, Northwestern absorbed by the University of Illinois, Cleveland taken over by the Western Reserve University.

HIGH SCHOOL REQUIREMENTS IN 1923.

The Conference has gone on record, as well as the National Association of Boards of Pharmacy, in regard to the high school requirements to become effective in September 1923. As might have been anticipated, the "go slow" interests already think they see the utter destruction of pharmacy by this, as they think, radical educational requirement. When this resolution was adopted the date was purposely placed far enough in advance so that sufficient time would be given for all to adjust themselves to the new conditions.

That the pharmacy colleges will not be patronized, or that there will be no applicants before the boards, is not substantiated by the facts, for in every case of which I have knowledge the increased requirements have resulted in more students

and in students of better quality. Men and women of ability and educational qualifications are selecting pharmacy colleges with high standards. It is not reasonable to suppose that students of ability and culture care to be associated in classes with educational cripples; by educational cripples, I mean students without high school preparation. I make the statement, and am not afraid of successful contradiction, that the boys or girls, at the present time, who do not finish high school, or get an equivalent education, are handicapped for the remainder of their lives by this fact, if they enter any profession; pharmacy is no exception. I certainly should not intentionally do or advocate anything to injure or hinder pharmacy as a profession in carrying out its great mission, as I see it, of service to the people. I am thoroughly convinced that pharmacy must advance educationally with other professions, if it is to command continued respect as a profession and serve as it should the best interests of humanity.

ASSISTANT PHARMACISTS.

The work of the Conference of Pharmaceutical Faculties and the work of the National Association of Boards of Pharmacy have on the whole been coöperative. It is a well-recognized fact that all real progress must be by coöperation of these two organizations, and the spirit in which the National Association of Boards has handled problems is very commendable and it should have due credit for the progress that has been made.

It is the National Association of Boards that has the final word in regard to who may practice pharmacy. The Conference can lend support, but is without power except in a recommendatory way.

The question of the assistant pharmacist is a vital question bearing upon the future of pharmacy, so attention is called to the requirements (educationally) that should be demanded before candidates may be eligible for examination as assistants.

It is my firm conviction that no candidate should be allowed to take the assistant pharmacist examination until he has completed high school or its equivalent as a basis for his work. Less education as a basis upon which to build a profession is not accepted in any other recognized field of endeavor.

The main objection is the fact that the candidate, if allowed to qualify with less education, is thereby handicapped in ever completing his college course, for it is not at all likely, after the candidate gets assistant registration, that he will go back to high school to complete his course.

I recommend therefore, in the interests of the future of pharmacy as a profession and in the best interests of the candidates themselves, that this Conference go on record as opposed to assistant registration being granted until the candidate has, at least, completed high school work or its equivalent.

IRRITATION OF SENATORIAL EPIDERMIS.

Mustard plasters had a great day in the U. S. Senate last month. No longer can it be said that pharmacy receives no attention there, for eight hours of the nation's time of one day were consumed in debate on this hot proposition when the tariff on mustard plasters was under heated discussion. The question of the tariff on more important items like vinegar quite naturally required more of the Senate's time, involving calculations of anticipated revenues that will hasten slowly returning normalcy.—E. G. E.

BIBLIOGRAPHY OF PHARMACEUTICAL RESEARCH

Conducted by H. V. Arny, Reporter on the Progress of Pharmacy, Chairman of the Committee on Research.

On these pages, each month, will be found a list of articles on pharmaceutical research; the list appearing a certain month will record articles appearing in American journals of the preceding month and articles appearing in foreign journals will be recorded as quickly as possible after the journals reach the Reporter.

All articles appearing in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK which will be issued as soon after the end of the year represented as editing and printing conditions permit. Those desiring abstracts immediately can obtain same for a fee of one dollar each by communicating with H. V. Arny, 115 West 68th St., New York, and arrangements can also be made for securing at moderate prices photographic reproductions of entire articles when such are desired.

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COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 13.

(Abstract.)

WASHINGTON, D. C., May 11, 1922.

70. Motion to present to the Hygienic Institute of Prague a set of A. Ph. A. Proceedings and Year Books—Result of vote.—Carried.

71. Applicants Nos. 234–253 elected to active membership.

72. Motion to present to the British Museum certain numbers of the Proceedings and Year Books of the Association. Under date of April 24, 1922, Secretary Day has forwarded the following communication from W. A. Smith of the Department of Printed Books of the British Museum, London:

"For many years your Association had the kindness to present the British Museum with its 'Proceedings.' We have however had nothing since the 57th Annual Meeting. Can you let me know if this report is still issued, and if so would your Association care to continue to present it to the Museum and if possible to let us have back numbers to complete the file since No. 57? Anything you can do for us will certainly be very greatly appreciated."

It is moved by Day, seconded by DuMez, that the Association present to the British Museum Volumes 58 and 59 of the Proceedings and Volumes 1 to 8 of the Year Book.

73. Communication from Chairman LaWall relative to the Apple legacy. Under date of May 4, 1922, Chairman LaWall writes as follows:

"Mrs. Ella M. Apple, the mother of Franklin M. Apple, of whose estate the A. Ph. A. is the residuary legatee, was in to see me recently and asked if the A. Ph. A. would join with her in protesting a certain item in the auditor's accounting of the settlement of the estate.

"I looked into the matter and found that the estate had been settled, the auditor's report filed and approved by the Court and disbursements made under proper authority in June 1920. This is nearly two years ago and after consulting an attorney I learned that there was no chance of such a protest succeeding unless evidence could be presented proving an error to have been made.

"According to Mrs. Ella Apple's own statement to me she has no such proofs, but simply wants satisfaction concerning some details of the accounting. I therefore, after consultation with several A. Ph. A. members in Philadelphia, decided that the Association did not want to join in any such movement and so informed Mrs. Apple. I did this hurriedly as she had to have an answer the following day. I thought it best that the Council should know of these facts and therefore send them to you for publication."

74. Election of active members. No. 254, J. Elmer Johnson, 165 N. Wabash Ave., Chicago, Ill.; No. 255, Hans Tunis Schantz Hansen, 1042 Logan Ave., Waterloo, Iowa; No. 256, Carl L. Krafft, 20 Western Ave. N., Lake Forest, Ill.; No. 257, Frederic Burton Chase, Veterans Hosp. No. 44, West Roxbury, Mass.; No. 258, John William Phillips, 307 N. 11th Ave., Yakima, Wash.; No. 259, Lester John Swift, 4704 18th Ave. N. E., Seattle, Wash.; No. 260, Albert Eugene Clyde, 309 Park Ave., Glencoe, Ill.; No. 261, William G. Wignall, Western Pennsylvania Hospital, Friendship and Mellvale, Pittsburgh, Pa.; No. 262, R. C. Shultz, Worland, Wyo.; No. 263, Ray J. Cook, 111 East Second St., Casper, Wyo.; No. 264, Primitivo Jason, 227 M. H. del Pilar, Ermita, Manila, P. I.; No. 265, Harry Gilman Morse, Huron, Ohio; No. 266, Donald Carson Cowles, 105 N. Main St., Livingston, Mont.; No. 267, Wm. Clarence Braisted, 2802 Wisconsin Ave., Washington, D. C.; No. 268, Benjamin H. Cohen, 4000 Girard Ave., Philadelphia, Pa.; No. 269, David Coleman Gross, 154 Carlton St., Philadelphia, Pa.; No. 270, Everett J. Roberts, 7 Cedar Lane, Highland Park (Del. Co.), Pa.; No. 271, Frank J. Austin, N. W. Cor. 5th & Lombard, Philadelphia, Pa.; No. 272, Joseph Robinson, S. W. Cor. 7th & Poplar, Philadelphia, Pa.; No. 273, George Kyle Schacterle, 741 N. 36th St., Philadelphia, Pa.; No. 274, Charles I. Frank, 601 N. 6th St., Philadelphia, Pa.; No. 275, Dale Zanier Hendrixson, 353 W. Queen Lane, Germantown, Phila., Pa.; No. 276, Edward Eben Glaymen, 2500 N. 31st St., Philadelphia, Pa.; No. 277, Theodore C. Flick, 5th & Market Sts., East Liverpool, Ohio.

A. G. DUMEZ, *Secretary.*

A. PH. A. COUNCIL LETTER NO. 14.

(Abstract.)

WASHINGTON, D. C., May 22, 1922.

75. Motion to present to the British Museum

certain numbers of the Proceedings and Year Book—carried.

76. Applicants Nos. 254-277 elected to active membership.

77. Election of active members. No. 278, Louis A. Ribar, Hamilton, Ohio; No. 279, Griff E. Bilbro, Wall St., Alabama City, Ala.; No. 280, William H. Horsch, 3362 Fulton Rd., Cleveland, Ohio; No. 281, Dumont Norris, 181 S. Arlington St., Akron, Ohio; No. 282, Frank Louis Grothe, 1135 Spring St., Cincinnati, Ohio; No. 283, Earl R. Dooley, Twin Falls, Idaho; No. 284, Fred A. Nevel, 3418 East 119th St., Cleveland, Ohio; No. 285, Morris M. Gerson, 9121 St. Clair Ave., Cleveland, Ohio; No. 286, Harry C. Hire, 2101 Broadway, Lorain, Ohio; No. 287, Otto Katz, 225 East 3rd St., Cincinnati, Ohio; Carl A. Schmidt, 209 S. Sudlow St., Dayton, Ohio; No. 289, Oswald E. Albl, 4821 Broadway, Cleveland, Ohio; No. 290, F. P. Bailey, 526 Main St., Zanesville, Ohio; No. 291, John E. Longnecker, 108 Bridge St., Struthers, Ohio; No. 292, Sallo Lee Shure, 153 26th Ave., Seattle, Wash.; No. 293, Fred C. Hailer, 3 Centre Place, Roxbury, Mass.; No. 294, William Southwell Bonnister, 1165 Dorr St., Toledo, Ohio; No. 295, Charles Miller, Chase & Kirby Sts., Cincinnati, Ohio; No. 296, Charles Wm. Kaminsky, 379 E. High St., Salem, Ohio; No. 297, Louis P. Miller, 12435 Cedar Road, Cleveland, Ohio; No. 298, George Henry Wilson, 209 S. 4th St., Steubenville, Ohio; No. 299, William Geo. Boucsein, 2535 Edmondson Ave., Baltimore, Md.; No. 300, Hermann Hirzel, c/o Sharp & Dohme, Baltimore, Md.; No. 301, Frank Frederick Deubel, 12109 St. Clair Ave., Cleveland, Ohio; No. 302, Noah J. Brody, 7531-33 St. Clair Ave., Cleveland, Ohio; No. 303, Mrs. Elizabeth Y. Garrett, 418 N. High St., Hillsboro, Ohio; No. 304, Mrs. Wilfred W. Peck, 209 W. Chicago Ave., Chicago, Ill.; No. 305, Henry A. Moore, Berryville, Va.; No. 306, James B. Early, Receiving Hospital, Detroit, Mich.; No. 307, Hallett Francis Smith, 1428 Elizabeth St. Detroit, Mich.

A. G. DuMez, *Secretary.*

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter. To maintain its activity and representation each Branch should see that at least three of its meetings during the year are reported in the JOURNAL.

BALTIMORE.

A very enjoyable meeting of the Washington and Baltimore Branches of the American Pharmaceutical Association was held at the Emerson Hotel on Wednesday, April 26th.

In his opening address, Dr. Hermann Engelhardt welcomed the Washington Branch and expressed his desire of having that Branch meet more frequently with their sister Association. The reading of the minutes of the last meeting was dispensed with by vote until a later meeting. General business was suspended for the program of the evening, which included an address by Dr. David I. Macht, Lecturer in Pharmacology at the Johns Hopkins Medical School. Dr. Engelhardt, in introducing Dr. Macht, mentioned the important and epoch-making investigations carried out by him in the field of pharmacology and especially referred to the more recent work on the benzyl derivatives and their relation to the opium alkaloids.

Dr. Macht, in his opening remarks, pointed out very clearly that pharmacology is only one division of biology, and expressly stated the principal aim of this particular branch as being the establishment of the relationship between chemical structure and physiological action. Then the lecturer began his "Benzyl Story," which was the outcome of the thorough investigation of the alkaloids of opium. Dr. Macht found that the three alkaloids—morphine, codeine and thebaine—produced stimulation of the smooth muscle, whereas the three alkaloids—papaverine, narcotine and narceine—produced relaxation. Dr. Macht, in his researches, found that peronine, which is a benzyl derivative of morphine, contrary to the

stimulating action of morphine, produced relaxation of the smooth muscle, and, further, that cotarnine made from narcotine, which does not contain a benzyl group, did not produce relaxation. His conclusion, therefore, was that the benzyl group was the determining factor producing relaxation. This observation then led to the later work on simpler benzyl derivatives. Various benzyl esters were prepared such as the benzoate and acetate, and it was found that they also acted as sedatives on smooth muscles. In addition to their sedative effect, these have local anesthetic value, which was, Dr. Macht said, discovered accidentally by tasting benzyl alcohol and the action is similar to that of cocaine. In addition to its anesthetic properties, benzyl alcohol possesses antiseptic properties, making it, therefore, very desirable for subcutaneous injections. Another important property of benzyl alcohol is that it is about forty times less toxic than cocaine.

Dr. Macht said that the granting of the Research Fund from the American Pharmaceutical Association for the current year, together with other similar funds, enabled him to carry on the extensive study of the structure and therapy of atropine. In these studies the investigator found that the base tropine does not play the important part in producing mydriasis usually attributed to it, but the acid radical linked with it, such as tropic acid and mandelic acid. Since the ester formed by tropine and mandelic acid (a benzyl derivative) produced mydriasis superior to that of atropine, which is tropine tropate, Dr. Macht was convinced that the mydriatic effect of tropine mandelate, or Homatropine, is largely, although perhaps not entirely, due to the benzyl group present in mandelic acid. In closing Dr. Macht pointed out the wide unexplored field for pharmacological investigation.

The open discussion of the paper by Drs. DuMez, Dohme, Kebler and Engelhardt brought out more interesting information.

Dr. A. R. L. Dohme welcomed the Washington Branch and urged a strong central union in the American Pharmaceutical Association. Dr. Dohme also asked the pharmacists for their help in protesting against the use of premedicated alcohol in medicines for internal use.

President S. L. Hilton of the American Pharmaceutical Association, after thanking the Baltimore Branch for their kind invitation, urged the pharmacists to use their combined efforts to oppose the use of premedicated alcohol in pharmacy, saying that it would be detrimental to retail pharmacy. He then touched on the reorganization program of the A. Ph. A. and also asked the Baltimore Branch for its support for the National Home for the A. Ph. A., which is proposed to be erected to provide permanent headquarters for the Association.

A motion was made by Dr. E. F. Kelly that a committee be appointed to draw up a protest to be sent to the secretary of the treasury, opposing the use of premedicated alcohol in medicines for internal use. Dr. Engelhardt appointed on this Committee: Chas. C. Neal, *Chairman*, Robt. S. McKinney and Chas. L. Meyer.

Light refreshments were served, and the remainder of the evening was devoted to social affairs.

The attendance at this meeting was very good and it is hoped that more frequent joint meetings will be held.

JOHN C. KRANTZ, JR., *Secretary pro tem.*

MAY MEETING.

The May meeting of the Baltimore Branch of the American Pharmaceutical Association was held at the Emerson Hotel on Friday evening, May 26th.

Dr. Engelhardt, as a member of the National Formulary Revision Committee, outlined to the members of the Branch the progress of the work of the committee, specifically mentioning several preparations on which the opinion of individuals was requested and obtained. Dr. Engelhardt referred to the difficulty of deciding upon the usefulness of certain preparations that had been suggested, and of obtaining opinions, particularly from retail pharmacists, on these points. To illustrate, some time ago 250 questionnaires were sent out to the pharmacists of the city and state to obtain their opinions on the advisability of admitting, deleting, or modifying certain preparations, with the result that only twenty-six replies were received.

In introducing the main topic of discussion—the plan of reorganizing the American Pharmaceutical Association—President Engelhardt explained that it was the desire of the Branch to have this important matter discussed by some prominent members of the Association from out of the city, but had found this impossible. Therefore, he would ask Dr. Kelly, who is a member of the Executive Committee,

which suggested the plan of reorganization, to discuss it, and it was hoped that after his remarks the members present would freely express themselves concerning the plan.

Dr. Kelly thought that in order to properly consider the plan as suggested, it was necessary to briefly review the history of the Association and conditions which led to the demand for reorganization.*

The plan was generally discussed by Drs. J. F. Hancock, H. Engelhardt, J. E. Hancock, W. J. Lowry, and others.

B. OLIVE COLE, *Secretary-Treasurer.*

CHICAGO.

The 127th meeting of the Chicago Branch of the American Pharmaceutical Association was held Friday evening, May 5th, at the University of Illinois School of Pharmacy Building, Chicago, President C. M. Snow presiding. Announcement was made that this was the last meeting of the Branch for the present Association year and that resolutions or other matters to be presented to either the Illinois Pharmaceutical Association at its June meeting or to the American Pharmaceutical Association at its August meeting or to the summer meetings of the Revision Committees of the U. S. P. and N. F. should be offered at this time.

The scientific subject of the evening was presented in four excellent papers entitled as follows:

"Botany of Aloes," by Dean Wm. B. Day.
"Pharmacognosy of Aloes," by Prof. E. N. Gathercoal.
"Therapeutics of Aloes," by Dr. Bernard Fantus.
"Preparations of Aloes," by Prof. C. M. Snow.

Professor Day said that the production of aloes dates back to the beginning of the Christian Era, or earlier, for the drug was known to Celsus, Dioscorides and Pliny as well as to the later Greek and Arabian physicians. The early accounts indicate that the Socotrine Aloes was most highly esteemed and that a Greek colony was established in the Island of Socotra for the purpose of making sure of a supply of this important drug. The introduction of aloes into the West Indies must have occurred very shortly after the establishment of the first settlement, for in 1657 a traveler reports the aloe plant as one of the most useful plants of the island of Barbados, and Barbados Aloes was listed in the London drug warehouse as early as 1693. Attention was called to the fact that the aloes mentioned in the Bible is an entirely different product—the fragrant resinous wood of a large tree growing in the Malayan Peninsula and still employed as an incense in the far East. The preparation of aloes from the aloetic juice of the plant and the appearance of the product as obtained either by slow evaporation of the aloetic juice by exposure to the sunlight or by more rapid evaporation by means of artificial heat were discussed. The aloe plants were described and illustrations of several species were shown. The following synonymy applies to the official species:

Aloe vera (Synonyms: *A. barbadensis* and *A. vulgaris*) (*A. officinalis* and *A. chinensis* are varieties of *A. vera*), the source of Curacao or Barbados Aloes.

Aloe Perryi (and probably *A. Succotrina*), the source of Socotrine Aloes.

Aloe ferox (Synonyms: *A. Perfoliata ferox, A. muricata, A. horrida, A. pseudoferox, A. subferox*), the source of Cape Aloes.

The cultivation of aloes is carried on chiefly in the West Indies in the islands of Bonaire and Aroba and to a lesser extent in Barbados, also in South Africa and in East Africa as far north as Somaliland.

Professor Gathercoal dealt with certain phases of the description of Aloe in the U. S. P. IX, and the advisability of some decided changes being made. He introduced this question: "In view of the fact that there seems to be no difference in the therapeutic qualities of Socotrine Aloes, South African Aloes and West Indian Aloes, is it worth while to distinguish in the Pharmacopoeial description between these three commercial varieties of Aloes?" It is to be noted that there are some striking price variations between the commercial aloes. For instance, Socotrine and Barbados Aloes have been quoted for some years in the wholesale price list at more than $1.00 per pound. Cape Aloes has ranged at 30c and more per pound, while Curacao Aloes has been a few cents less per pound than Cape Aloes. Professor Gathercoal has done considerable work in connection with the color of the crude drug, the color of the powdered drug, the solubility in alcohol and in water, and the color of these solutions, the nitric

*The address, as reported by Secretary B. Olive Cole, will be found under "Discussions of the Tentative Plan for the Reorganization of the American Pharmaceutical Association."

acid color reaction and other tests based on color changes.

It seems impossible to distinguish between the three commercial kinds by the external color of the crude drug for in each variety the color ranges from a dark yellowish brown to nearly black. The variations in color may be due to different methods of evaporating the aloetic juice, yet it is apparently a well-established fact that the color of the drug is affected by aging, becoming darker with increased age, exposure to light and to air. This is especially noticeable in the powdered drug and is also true of aloin.

The range of solubility in water is wide but certainly the minimum solubility for U. S. P. drugs should be not less than 50%. The color of the aqueous solution showed a wide range also. As a rule West Indian Aloes forms a dark red solution when viewed across a 15-mm. tube against a white background, while Socotrine Aloes forms a dark yellow solution and Cape Aloes a light yellow. The nitric acid test of the present Pharmacopoeia which is applied directly to the powder was not found so satisfactory as the reaction obtained by adding 2 cc of nitric acid to 5 cc of filtrate after macerating and agitating 1 Gm. of aloes in 100 cc of water for two hours. With Curacao and Barbados Aloes the color obtained by viewing the mixture in a 15-mm. tube against a white background is a brilliant dark crimson-red. The color from Socotrine Aloes under similar conditions is a light yellow rapidly changing to pale or dark orange-red and the color from Cape Aloes is at first a rather dark orange-red changing to a dark and brilliant green. In conclusion, it would seem as though it would be advisable to include certain points of distinction between the three kinds of aloes but to group a number of their points in the description.

Dr. Bernard Fantus presented a most excellent and very characteristic paper on the therapeutics of aloes, especially from the standpoint of the inclusion of aloes and its preparations in our national standards. He brought out the point that the liquid preparations of aloes are losing favor because of their very disagreeable taste and that Tincture of Aloes will probably be omitted from the next revision of the U. S. P. He criticized the combination of aloin, strychnine and belladonna, in pill form. Nothing may seem more logical than to add to the aloin some strychnine for the purpose of increasing the irritability of the motor neurons on which the aloin is to act; nor might it seem that anything would be more suitable to counteract the reputed tendency of aloes to produce griping than the powerful antispasmodic, belladonna. Unfortunately, by giving them at the same time they cannot possibly act together, because of the different speed and duration of action of the three agents. Aloin is slow in action, requiring from ten to twelve hours—that is why it is generally given at bedtime; strychnine and atropine, on the other hand, are rapidly absorbed and rapidly excreted, having but a brief duration of action. No experienced clinician would expect either of these alkaloids to act for more than four hours. The alkaloids have left the system by excretion before the aloin has acted.

Prof. C. M. Snow dealt largely with the historical side of the preparations of aloes and remarkably sustained his contention that the medicinal use of aloes as indicated by the variety of its pharmaceutical preparations has not decreased during the twenty centuries or more that it has been employed as a medicine. The fact that there are at present in the U. S. P. and N. F. twenty-four preparations of aloes and aloin is remarkable.

Hiera Picra is probably the oldest pharmaceutical preparation of any drug that is still official in the present-day Pharmacopoeia.

An extended discussion followed the reading of the papers. From a number of suggestions regarding U. S. P. and N. F. revision the following motions were adopted:

Moved by I. A. Becker, seconded by F. J. Zuck, that the Chicago Branch, A. Ph. A., recommend to the Revision Committee of the U. S. P. a modification of the formula of Chalk Mixture (compound chalk powder) by omitting the sugar and the acacia, and adding saccharin to give the desired sweetness.

Moved by I. A. Becker and seconded, that the Chicago Branch, A. Ph. A., recommend to the Revision Committees of the U. S. Pharmacopoeia and the National Formulary that yellow petrolatum be designated instead of white petrolatum in formulas in which white petrolatum is now used.

Some objections were made by Mrs. A. S. Druehl.

Moved by William Gray and seconded, that the Chicago Branch, A. Ph. A., recommend to the Revision Committee of the National Formulary that salicylic acid be omitted from the formula of Lassar's Paste (Pasta Zinci).

E. N. GATHERCOAL, *Secretary.*

NEBRASKA.

The regular monthly meeting of the Nebraska Branch of the American Pharmaceutical Association was held at the College of Pharmacy, University of Nebraska, on the evening of April 6. The program for the evening consisted of a report by Dr. Albert Schneider, of the College of Pharmacy, upon the effects of cannabis. Dr. Schneider has done quite a little work in the past year in the investigation of the physiological action of this drug, and his report was a very interesting one. During the course of his investigations, he administered the drug to himself in large doses and attempted to record his sensations at the time they were observed. At the close of Dr. Schneider's discussion, a number of questions arising therefrom were informally discussed in the meeting.

J. B. BURT, *Secretary.*

MAY MEETING.

The Nebraska Branch of the American Pharmaceutical Association met for the regular monthly meeting on the evening of May 3, at the College of Pharmacy, University of Nebraska. The program for the evening consisted of a paper by Dr. Albert Schneider upon "California Bees" and a discussion of "Pharmaceutical Ethics" by Dr. R. A. Lyman. Dr. Lyman's discussion was based upon a suggested code of ethics, by Charles H. LaWall, which appeared recently in the JOURNAL OF THE A. PH. A. Parts of the code were read and discussed by Dr. Lyman, following which a number of those present took part in an open discussion upon the subject of Pharmaceutical Ethics.

J. B. BURT, *Secretary.*

NEW ENGLAND.

A regular meeting of New England Branch of the American Pharmaceutical Association was held at the Massachusetts College of Pharmacy, Wednesday, March 22nd.

Owing to the illness of Chairman Leon A. Thompson the gathering was called to order by Vice-Chairman William R. Acheson.

The secretary's minutes of the previous meeting were read and accepted.

The regular business having been disposed of, Clare O. Ewing of the research laboratories of the United Drug Company addressed the members on the subject of vitamines. The speaker gave a comprehensive historical outline and presented facts proving that such substances existed and were very necessary for the development of the body and sustaining of body processes.

Mr. Ewing was followed by Dean Bradley whose topic was percentage solutions. Professor Bradley, who has given much time and study to this important matter, discussed the various methods in common practice, of preparing percentage solutions, and the confusion which results from lack of uniformity in their preparation. Figures were exhibited showing the wide variation in amount of desired substance contained in supposedly the same percentage solutions, when prepared by different methods of calculation.

Dean Bradley suggested that when percentage solutions are desired for pharmaceutical and medical use a uniform method—of weighing the substance and dissolving it in a sufficient quantity of the solvent to make one fluidounce (480 minims)—be adopted.

Short discussions followed the address, and a motion was made and carried that the Branch adopt Dean Bradley's suggestion.

LESLIE B. BARRETT, *Secretary.*

MAY MEETING.

A regular meeting of the New England Branch A. Ph. A. was held at the Massachusetts College of Pharmacy on May 3rd. The senior class of the college was present as guest.

The meeting was in charge of Chairman Leon A. Thompson.

At this meeting the members had the pleasure of greeting Major George L. Burroughs, formerly instructor in Materia Medica at the college. He left in 1917 to engage in the medical service of the American Red Cross and returned to this country only a few months ago. Major Burroughs gave an interesting account of his experiences in pharmaceutical work during four years of service in various European countries.

Following this address, Charles W. Pearson, lecturer on commercial pharmacy at the college, held the attention of the meeting. The subject of his address was "Team Work."

A luncheon was served after adjournment.

LESLIE B. BARRETT, *Secretary.*

NEW YORK.

The May 1922 meeting of the New York Local Branch of the American Pharmaceutical Association was called to order in the Lecture Hall of the New York College of Pharmacy Bldg., Monday, May 8th, President Wimmer in the chair. Thirty-five members and friends were present.

The minutes of the preceding meeting were read and approved.

Membership Committee.—The following three applications were received for membership in the Parent Organization: Abraham Wais-

brod, 2117 8th Ave., New York City, Gustave Napoleon, 201 Mott St., Trenton, N. J., Nelson Smith Kirk, 168 Rutledge St., Brooklyn, N. Y.

Audit Committee.—Dr. Diner reported all bills paid.

Education and Legislation.—Mr. Eddy brought in a report which was accepted with the thanks of the Association.

Treasurer's Report.—The report of Treasurer Horstman was ordered filed.

Council.—Representative Hostmann reported that no business was transacted by the Council.

Unfinished Business.—It was moved, seconded and carried by a vote of 17 to 1 that the New York Branch A. Ph. A. go on record as opposing the plan proposed by the Executive Committee of the Parent Organization. This motion resulted after considerable discussion.

Communications.—Dr. Hostmann tendered his resignation as member of the Council from the Branch, which was accepted with regret.

A letter of resignation from Mr. Hereth was also received and accepted with regret.

Jacob Weil, chairman of the committee to attend the meeting of the delegates to discuss the erection of an Academy of Pharmacy, brought in a report. It was moved, seconded and carried that the report be received, the committee discharged with the thanks of the Branch and a new committee appointed to work with similar committees from other associations.

Progress of Pharmacy.—Dr. Diekman, Chairman of the Committee on Progress of Pharmacy, reported progress.

On account of the lateness of the hour Dr. Diner's paper was ordered postponed until the next meeting.

F. F. Berg presented a paper on "The Pharmaceutical Manufacturer and Pharmacopoeial Revision." After discussion on the paper, a vote of thanks was extended by the Branch to Mr. Berg for his part in the program.

HUGO H. SCHAEFER, *Secretary.*

PHILADELPHIA.

The speakers of May 9, at the Philadelphia Branch A. Ph. A., Drs. E. F. Kelly, Jeannot Hostmann, and Charles H. LaWall, were entertained at the City Club by the Branch members, prior to convening the meeting at the Philadelphia College of Pharmacy and Science.

The meeting was called to order by President Jenkins. Dr. E. F. Kelly was introduced and spoke on the Reorganization Plan submitted by the Executive Committee of the Council A. Ph. A. In opening his subject the speaker stated that "coördination" would have been a better term than "reorganization" and such denomination would probably have removed some misgivings and dispelled some doubts from the minds of members.

He referred to the history of the Association as of great value to pharmacy, and that now preparations should be made for extending the usefulness of the Association. He stated that there were problems constantly coming up, the solution of which required the concerted action of an Association membership representative of American pharmacy. As an illustration of what the Association might do he pointed to the work accomplished and activities of the American Medical Association.

Dr. Kelly did not claim perfection for the plan but he considered that it was an excellent basis from which a working plan would, in his opinion, result in the near future.

Prof. Jeannot Hostmann gave his views of the plan which were in line with those of the preceding speaker. In his opinion we could not conscientiously expect state associations to aid the American Pharmaceutical Association unless it first proved to them that the A. Ph. A. was willing and able to be of benefit to them.

Prof. Charles H. LaWall spoke of the need of a plan whereby the Association could more efficiently serve pharmaceutical interests.

ABSTRACT OF DISCUSSION.

Dr. F. E. Stewart favored any plan that would advance the work of the Association, and bring about a more effective coöperation between physicians and pharmacists.

Ambrose Hunsberger stated that, often, what would be the interest of one group of pharmaceutical activities would be detrimental to the others. He thought that no one man could properly and effectively represent all interests embodied in the proposed organization.

President Jenkins pointed out that a very important branch of government service had been overlooked, namely, the Department of Agriculture, Bureau of Chemistry, which carried on much experimental work and which was entrusted with the Food and Drug Law enforcement.

The views of Dr. H. C. Wood, Jr., and J. C. Peacock are printed elsewhere in this JOURNAL.

The speakers were extended a vote of thanks. The Branch took no action on the plan.

J. W. E. HARRISSON, *Secretary.*

DISCUSSIONS OF THE TENTATIVE PLAN OF THE EXECUTIVE COMMITTEE OF THE COUNCIL FOR THE REORGANIZATION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

DISCUSSION OF THE PLAN OF THE EXECUTIVE COMMITTEE, A. PH. A., FOR REORGANIZING THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

BY E. F. KELLY.

A study of the Constitution and By-Laws and early history of the American Pharmaceutical Association will show that it was originally intended as a general association to embrace and represent all classes of pharmacists. Later on in its history conditions arose which affected certain divisions of pharmacy, and it was considered preferable to establish divisional organizations to deal with these matters, rather than to have them come before the general association. In addition, mainly through the influence of the A. Ph. A., the various state associations came into being. Unfortunately, neither the national divisional organizations nor the state associations were affiliated with the A. Ph. A., and as a consequence, considerable confusion has arisen over the functions and scope of each. For many years there has been an increasing demand in the A. Ph. A. for some reorganization which will enable that Association to fulfill its original purpose, *i. e.*, to act as a general association, through which all divisions of pharmacy can operate and can express themselves nationally. A study of the Proceedings of the A. Ph. A. during the last 25 or 30 years will make this very clear to any student of its history, and it will be noted that several committees have been appointed to study the question of reorganization without, so far, any more concrete result than the establishment of the House of Delegates, which was intended to bring about closer coöperation between the A. Ph. A. and the state associations. The point to be emphasized is that the plan of reorganization suggested by the Executive Committee of the Council, A. Ph. A., is not the result of a sudden and recent demand, but is to meet the conditions which have gradually developed.

At the last annual meeting the Executive Committee of the Council was instructed to present a comprehensive plan of reorganization to the Council, which will be submitted to the annual meeting in Cleveland for final action. In the study of this question the Executive Committee was soon convinced that its duty could best be carried out by submitting a concrete plan of reorganization, embracing, so far as possible, the suggestions that had been made and not varying any more than necessary from the present organization of the American Pharmaceutical Association. The important questions are: Shall the A. Ph. A. continue to be a restricted organization with a limited membership, dealing mainly with matters of professional pharmacy, or shall it broaden its scope and attempt to represent all phases of pharmacy in matters of general interest; shall it continue to act in a general meeting, or shall it be converted into a delegated body; if converted into a delegate body, by what units shall the delegates be selected; and if the membership is general, how shall it be secured?

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* This discussion was reported by Secretary B. Olive Cole, as part of the minutes of Baltimore Branch, A. Ph. A. It is printed here so as to have all discussions and papers on the subject together. Dr. Kelly is Treasurer of the American Pharmaceutical Association, Chairman of its House of Delegates, member of the Executive Committee of the Council, A. Ph. A. For several years he has studied the question which will come up at the Cleveland A. Ph. A. convention for action. He has presented the plan before Philadelphia and Baltimore A. Ph. A. Branches.

EDITOR'S NOTE.—This report covers also the presentation by Professor Kelly, before Philadelphia Branch A. Ph. A. At the latter meeting he emphasized "that the Executive Committee considered it to be a duty to present a concrete plan, so as to cause a discussion and bring out, if possible, any weaknesses and any suggestions for improvement."

The suggested plan,* as will be noted, adopts the idea of a broad association—that of a delegated representation, selects the state associations as the units and secures the general membership through the membership of the state associations. This will bring pointedly before the members a choice between the organization as it now exists and this suggested modification.

The plan of reorganization calls for a general annual meeting of the members, to which the President will make his annual address, and to which the House of Delegates will make its annual report. This gives to the general membership the right of review of the acts of its officers and of its delegated body. In addition, the members elect by mail the President, Vice-Presidents and members of the Board of Directors (now known as the Council), as at present. The Secretary and Treasurer are elected by the House of Delegates, upon nomination of the Board of Directors.

The work of the Association is divided under three heads—that of Legislation and General Policy, Finance, and Professional and Scientific Interests. The first would be done by the House of Delegates, composed of the officers of the Association, delegates from the state associations, the departments of the National Government interested, present national divisional organizations and the professional and scientific sections. The finances would be managed by a Board of Directors of nine members, three elected annually by the general membership upon nomination of the House of Delegates. They would have charge of all property and conduct all the publications and other business features of the association. The professional and scientific work will be carried on by the necessary sections, composing those now in existence and others that may be necessary. It will be seen that this parallels very closely the working arrangement now in force in the American Pharmaceutical Association, only that it gives the House of Delegates more authority than it has at present, and relieves the general sessions of the mass of detail work that it is now called upon to do. In addition, there will be the necessary standing and special committees, to be appointed either by the House of Delegates or by the President.

This plan would in no wise affect the present finances of the Association, because, in the first place, they would still be managed by the Board of Directors, corresponding to the present Council; and because, in the second place, they are amply protected by the closing sentence of Article V of the Constitution, requiring that any proposition to amend the Constitution for the purpose of permitting the expenditure of the invested funds of the Association, shall require a majority of seven-eighths for its passage.

If this plan should be adopted by the American Pharmaceutical Association and later by the state associations, it would bring into the A. Ph. A. a membership of between 30,000 and 40,000 pharmacists, representing every phase of pharmacy, and would in turn give to the state associations the major part in initiating and controlling the policy of the Association. Such a general membership, it is believed, would enable the A. Ph. A. to give the pharmacists of America a superior service at a very reasonable cost, and it is hoped that the member would be required to pay but one fee, which would carry membership in the state and national associations. Furthermore, the national association should not concern itself in any more than a helpful way with the work of the present divisional organizations, which are giving their members a needed service, and which should be heartily supported. This general organization will in turn enable the divisional organizations to unite in a concerted movement in any matter in which the whole body of pharmacy is interested, in which they are unable to so act at present.

The principal objections that might be raised as foreseen by the Executive Committee are that this plan would turn over to the state associations the entire control of the American Pharmaceutical Association; that it might affect its financial resources; and that it might, through the general work of the A. Ph. A., lessen its reputation as a professional and scientific body. It is hardly to be expected that the state association will come into a general organization and provide it with the necessary membership and resources unless they are given their proper place in its management; in addition the A. Ph. A. has already set up a House of Delegates to secure the active interests of the state associations in its work. The matter of finance has heretofore been dealt with. There seems to be no reason under the new plan that the scientific and professional work of the Association would be interfered with, because the sections which now carry on this part of the work of the A. Ph. A. are continued and strengthened. It should also

* April JOURNAL A. PH. A., 11, 266–268, 1922.

be noted that the general association has the right of review of the action of its constituent divisions. Further objection might be that this plan apparently abolishes the local branches, but it was assumed that if branches are required in any locality, they could exist as sub-divisions of the state associations. Furthermore, it would hardly be possible for a national organization to have two constituent bodies within any state, which would be true if the state associations are made the units of the national association and local branches are also continued.

DISCUSSION OF SOME OF THE DETAILS OF THE REORGANIZATION PLAN.

BY HORATIO C. WOOD, JR., M.D.

The report of the Executive Committee on a plan for modifying the organization of the American Pharmaceutical Association merits the most careful consideration of every member of the Association. Because I believe that in "multitude of counsel there is wisdom" I am glad of the opportunity to give utterance to some thoughts that have been suggested by the report presented, especially so as it seems to me that in the way the report was offered certain points have not been properly emphasized.

I am heartily in favor of the basic principle of a closer affiliation between the state pharmaceutical associations and the national body. It has always seemed to me a rather anomalous situation that the various state associations should bear no organic relation to the national body. I think it must be granted that united, coördinated effort accomplishes more than scattered, individualized activity. The more closely the profession is coördinated the more successful it will be in accomplishing the purposes of its organizations. Since the basic purpose of the state associations and the AMERICAN PHARMACEUTICAL ASSOCIATION is fundamentally the same, it seems to me that the present lack of cohesive concert is a source of weakness.

There are, however, certain details of the plan which seemed to me to be of doubtful advisability and to these I should like to call attention.

1.—As there is no definition for membership in the A. Ph. A. I presume it is intended that the conditions at present stated in the by-laws of this organization remain in force. As the suggested plan is conditioned on the coöperation of the state associations it seems to me that we should offer distinct inducements to the state associations to accept it. If we are to expect the state associations to turn over their membership *en masse* to the A. Ph. A. we must be ready to reciprocate in kind. While, of course, we cannot adopt any rule which would affect the standing of the present members of the A. Ph. A., an arrangement conditioning future members on their previous acceptance by local organizations, I believe, would increase the readiness of the latter to join the movement for coördination.

2.—By the term "National Associations" referred to in the scheme of the Executive Committee I presume is meant such organizations as the N. A. R. D. or N. W. D. A., etc. I confess that it seems to me that the situation regarding these national associations is very different from that of the state associations. As membership in the state associations is open to the members of these national organizations I do not see what special advantage is to be gained by giving the latter separate representation in the House of Delegates. It is at least conceivable that in the future some national organization might be formed whose purpose would be more or less antagonistic to those of the A. Ph. A. and who, under this plan, could claim representation in the House of Delegates. Moreover, as there is no proviso about a ratio of the number of members and number of delegates from these national bodies by forming a large number of small associations they might acquire an undue power in the House of Delegates.

3.—The idea that the state associations would come in with 100% of their membership seems somewhat Utopian in its conception. We certainly could not expect that all the members of the state associations would be willing to pay $5 a year extra for membership in the A. Ph. A. If there is no increase in the present dues of the state associations it would mean that the latter would have to turn over to the national organization a part of their present income and function on a materially smaller *per capita* expense than they do at present. I very much doubt if the state associations would regard this plan as feasible. Moreover, although I have no personal knowledge of the facts I am credibly informed that in some of the state associations the dues are smaller than they are in the A. Ph. A. I am told that in some states the membership is as low as $2 a year. I cannot see how such organizations could turn over to the national body a sum large enough to pay for subscriptions to the JOURNAL to say nothing of the other activities of the A. Ph. A.

While the increased membership would mean a bigger income from advertisements in the JOURNAL I do not believe that these latter could be expected to pay the whole cost of this magazine. The only way that this financial difficulty could be met under the plan would be by the states turning over a percentage of their dues rather than a fixed amount; *i. e.*, if membership in one state was $10 a year and in another $2 a year the first would turn over $5, for example, and the second $1 to the parent organization. This, of course, would be manifestly unfair since it would mean that the member in one state was paying for the JOURNAL to be sent to some one in another state.

It seems to me that we can hardly expect the state organizations to increase their dues in order that they might have funds enough to turn over to the national body. There may be some members of the state organizations who would not appreciate the advantages of membership in the A. Ph. A. who would justly rebel at being forced to pay for prerogatives which he does not desire.

The only solution that I can see of this difficulty would be to abandon the idea that membership in a state association automatically enrolls one in the A. Ph. A.; *i. e.*, that a member of the state association who desired to enjoy the advantages of the national body would pay an extra sum beyond his ordinary state dues. If such a course be adopted, it seems to me rather too optimistic to expect 100% of the members to avail themselves of the opportunity.

4.—There is a little lack of definiteness about the nomination and election of officers. It is provided, for instance, that the Board of Directors shall nominate to the House of Delegates the Secretary and the Treasurer. I presume this means that the Board should offer the name of one candidate for each of these offices, to be confirmed by the House of Delegates. Apparently, the latter would have no power of nominating an opposition candidate in the House so that in case of a difference of opinion between the Board and the House there would be a deadlock. While I believe that as a general principle it would be preferable to give the House of Delegates some real authority in selection of these officers it seems to me that the present plan of giving the Council (or as it is called in the new scheme, Board of Directors) final authority in this matter is preferable to the possibility of a stalemate in the filling of so important an office as the General Secretary.

The nomination of the President, Vice-President and Directors is placed in the House of Delegates but as it is provided that the election shall be by mail ballot I presume that it is intended that the House of Delegates shall nominate, as is at present done by the Nominating Committee, several names for each office. I feel that the committee who prepared this report would have done well had they made this more explicit.

While I see certain weaknesses in the submitted plan, I feel that the Association owes a debt of gratitude to the Executive Committee and the Council for having presented a concrete scheme so valuable in its general principles, and I trust that it will lead to definite action by the Association at the next annual meeting.

THOUGHTS ON REORGANIZATION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

A Study and an Appreciation and a Plan for Reorganization.

BY JOSIAH C. PEACOCK.

Organized in 1852, the American Pharmaceutical Association then offered, as its name would indicate, an opportunity to every worker in American pharmacy for coördination, for co-operation with every other worker. This was the first opening of this kind, and it was offered both to individuals and the then existent groups.

If—as that branch of medical endeavor which provides and dispenses the materia medica—pharmacy is an essential service to mankind, it must be protected, practiced, promoted and preserved. Then, what is more natural than that this conception eventually should appeal as a duty, and American pharmacists should decide to associate themselves, with these objects as their purpose? What further proof of their ability is asked than that of their foresight—for they drew no line around a particular portion of this field of endeavor; but circumscribed the whole; while above the wide and open portal of this new temple, which vision had erected in the wilderness of their day, they deeply cut a name, of which nothing less than their duty-purpose and its whole compass would be worthy?

With the ennobling thought which inclines all to believe that man should work with man, so that common good may result, each individual pharmacist and group was welcomed with his

problems, that all might help and all be helped—this thought has not relaxed, nor welcome hushed, nor portal closed in all these years. Thus have American pharmacists* striven to give to pharmacy an unceasing, fostering care which is their responsibility. That in the course of these efforts there should, from time to time, develop situations which demanded adjustment with existing conditions is not only what history records as the progress of man in all human associations, but also evidences the need of constant supervision of human tendencies. To-day the divisions of labor, concerned with this essential service, are confronted with conditions which all recognize as having been brought about by economic changes during the past seventy years. The American Pharmaceutical Association, once truly representative of American pharmacy, because of these changes, is no longer so in fact; so that in importance, for both present and potential progress of the common cause, this occasion has only been equalled in its history when the Association was organized. This new occasion asks a new duty of the membership.

There is neither reason nor thought to reformulate or revise the purpose of this or any other association. There is only dutiful determination to have the American Pharmaceutical Association better understood and more effectively used by every individual and group for coördination and coöperation, as was originally intended. This done, it can again be as truly representative in fact as in name.

Because associations, like nations, grow from and with the individuals upon whose collective strength they rest, it should not be exacted or expected of every individual, in either of said bodies at any period of progress, to foresee and forestall all changes, not even those of the near future; assuredly not justly so, when there has been no history to counsel them in their plans for either individual or group action. Time alone can write the pages for such guidance for associations and nations; it is, however, just to ask those who have had the pain and benefit of experience to interpret these into deliberation which shall point to action.

As if to test the courage and endurance of its builders, the temple of pharmacy was scarcely visioned, when economic changes spread over the Nation, exempting few, if any, of the vocations; pharmacy fared no better or worse than others. Changes came in numbers and in such quick and close succession that traditions were as chaff before the gale; their presence was beheld with dread; their effect was yet to be understood, and traced back to the cause.

Time is required both to bring about changes and for comprehension of their full meaning. It is needless to dwell upon the lights and shadows which make the picture of to-day, except to be reminded that these shifting scenes, which shook a traditional sense of security, were not unattended by compensating good—for the vast array of inventions and improvements, in utility and pleasure, upon which the Nation has been so repeatedly called to look are viewed to-day as both cause and effect of all the transient disorder. At each stage, these things and changes were not only wonders because unthinkable a few short years before, but the source of much anxiety and joy, as their appearance and adoption, one by one, each time regave man the bread that for a season might seem to have been withheld. The thought of a division in tasks was rapidly ripening into a larger conception of man's ability to go still farther in specialized effort. This statement applies to American pharmacy as truly as to any other vocation. Indeed for this the storms have wrought another wonder—impulses until a few years ago, but destined to great good when understood—the individuals, having found their kinds, were driven closer and closer together, as the interest of one was gradually understood as the interest of the group.

Of the possible appalling effects of all the change from old to new none grips our attention as closely, nor fills our hearts more full, than that which reminds us of the confusion, if not misery, that may come to the totally unprepared from the changes which must ever be approaching as the result of a people's irresistible and unescapable development of themselves and their vocations. No other of these effects is so important for our guidance in this reorganization; these seventy years have written for American pharmacy a history which would seem to supply a model for every basic detail needed for its present counsel as to future prospects. For variety, these seventy years of experience are unmatched; experience advises organization and a continual

* The terms "pharmacist" and "American pharmacist" as used throughout this paper include every worker engaged in any division of pharmaceutical endeavor in America. The terms "pharmacy" and "American pharmacy" imply any part or the entire work as called for by the context.

vigilance over both itself and organization; undaunted, the American Pharmaceutical Association emerges bearing the problem we have before us, volunteers to adjust itself, and expresses its determination to do so.

The future may have something new in store, but never again can time meet the pharmacist totally unprepared, for now he has experience. As better organization can be his only safety, let us in this reorganization strive to make it secure, in what features we may, for all time.

Reasonable time, during which to review the changes in pharmacy, having now elapsed, let us look into their meanings, especially of those within the association which American pharmacy first organized as the custodian and repository of its trust. It is an interesting story, in which we see the pharmacist endeavoring to conform to the changing order of things; as he proceeds, unconsciously demanding of himself better accommodations for himself. It is the human story working to its end in pharmacy; nothing more, nor nothing less.

During the first half of the Association's life, the majority in attendance was composed of individuals who had a general but an earnest interest in all subjects brought before the annual meetings. The specialized effort of a later day was in an early formative stage—as a change to be made in existing conditions by the few, it was looked upon with some misgivings by the many. During this period, most of the members who attended, as well as others, had been trained in every practiced branch of pharmaceutical work and manipulation. They realized the need of general knowledge and actual experience in these matters for, if necessity pressed, they might be called upon to play in turn all of the parts. Their books were the minds, the willingness, the voices of their fellows. Theirs were the circumstances and needs of all early days; they must have the versatility as well as fortitude of the pioneer; they must be equal to any emergency—and such must always be the spirit of the pharmacist.

This period was at once the morning of associated effort in pharmacy and the twilight of provincial economic life within our nation. With time, all in attendance were no longer equally interested in everything that came before the Association's sessions, and members asked for a divisional consideration of subjects to better serve their trends and ends. Specialization was taking actual form, and asked attention. Separation into sectional activity was granted at the end of the first half of the present years—all the sections have been consistently encouraged in their special work by the entire body. Those on education and legislation—after functioning for a few years apart—united in effort, for the demand of the pharmacist has always been for better and more education, and his appreciation of responsibility to the public was to be expressed in safer legislation that involved more learning. At first the scientific section dealt with the search for and use of pharmaceutical knowledge; later, the investigator and dispenser separated, each to employ the given time in better advancing their respectively selected lines. The commercial section offered opportunities to individual and group to develop matters of finance and business administration. The arrangement made possible and practical sub-division into any number of sub-sections, the necessity or desirability of which might arise in any specialization of the work and service which must have to do with the producing, buying and selling of the commodity around which the entire industry revolves.

DIVISIONAL ORGANIZATIONS WITH NATIONAL SCOPE.

But time was working such changes as must come to satisfy demand at least, if not actual need, so shortly after the arrangements for sections had been made, separate and independent organizations with national scope had been formed by each of the divisions of pharmaceutical endeavor. In a large measure these new associations were effected by members of the American Pharmaceutical Association, who felt they were pursuing a proper course in trying out beliefs. That it was their right to do this cannot be denied, and regardless of what the A. Ph. A. has been or might have been, the formation of these organizations must be accepted as an inevitable outcome of the operation of natural law, for it is just plainly instinctive that each division should desire to assemble away from every other influence, there to be in charge of and in conference on its own particular matters, as does the individual. These organizations are designated by happily selected names which both describe and circumscribe their range of eligibility for membership. That they have served a very useful purpose and year by year develop more highly their chosen conception of group interest has abundantly justified the thought and labor used to create them. Unrest called for them; therefore, sooner or later they must be. American phar-

macy may well rejoice that all of them are here with years of experience through which to look upon both past and future, for the good of all. Although formed to further the particular needs of their special division, some measure of their attention must be accorded pharmacy as their basic interest—an inalienable relation which makes of each and every one of them a part "of one stupendous whole"—American pharmacy; and there is a strong kindred feeling among all of the divisions.

Such have been the shifting scenes within pharmacy itself, and anyone who stops for retrospection can scarcely dispute that all of this was unavoidable. In the light of this experience all divisions of American pharmacy are called upon to-day to consider the unusual opportunity for benefit of both pharmacy and pharmacist which reorganization will make possible.

To-day the American Pharmaceutical Association is the only national field where, as individuals, members of all divisions may go for consideration of all matters which pertain to pharmacy. Now, as before, many A. Ph. A. members are also members of one or another of the national associations of specialized concern. These individuals coöperate within the A. Ph. A. but, of course, only as A. Ph. A. members. Gratifying it is, upon scanning the personnel of officers of these national associations, to find such a large part of them members of state pharmaceutical organizations and of the American Pharmaceutical Association—consideration leads them to believe that their names should be on all such registers to which they are eligible. That is the spirit which silently yet surely works the miracles of progress; this interlocking membership holds up much encouragement before us in this reorganization; for, after all, we are to deal with and be helped by these pharmacists by whom better and closer organization is being regarded as more and more desirable.

The situation to-day is not that the members of the A. Ph. A. do not willingly and cheerfully coöperate—economic changes have made it desirable for the members of divisions to enter special associations—but the essential care for pharmacy, which is their mutual interest to preserve, demands an association of national scope wherein all divisions may associate in order that the decision of this association shall be representative of American pharmacy in every respect. To-day there is no association with such accommodations and influence; but all agree that there should be and can be. Certain it is, if pharmacy is to have the crystal conception to which it is entitled in the lay mind, pharmacists must comprehend this service and their responsibility to it in a degree that must enlist their individual support, interlocking it where possible for greater strength. There must be a fixed appraisement of pharmacy and pharmacist that is indelibly stamped and inflexibly stated. All of this may be accomplished if arranged for in this reorganization; it is foreseen that in this adjustment the individual can be offered an organic membership through local, state and national associations which will be an actual citizenship in American pharmacy, comparable to his civil citizenship. This advantage has long been coveted by many; it redoubles the influence of membership in each successive step; corresponding benefit and progress for the individual accompany it throughout; there is no individual which this reorganization can help to the extent that it can the retail pharmacist.

This citizenship is now regarded by practically all pharmacists to be quite as essential in the safeguarding of pharmacy to those trained for its purposes as any similar enlistment is in the preservation of another vocation, lay or professional. It is believed that the appreciation of this citizenship will cause it to be widely accepted, with the result of a greatly increased membership; and only a larger number can be properly indicative of the entire citizenry of pharmacy. But we must have our opportunity for citizenship before we can have our nation. A greatly increased membership can best serve through delegate representation; accordingly, this form of procedure also has been recognized; and nothing but a broad scope of membership and delegate representation could be in harmony with the theme to have A. Ph. A. truly representative of American pharmacy. No more favorable condition for ethical culture in pharmacy could be asked for; and an encouragement toward an understanding of ourselves is what we constantly need—that we shall keep steadily upon a self-conviction whose foundation is in truth, and from which alone can come the only trustworthy help, the moral support of the individual. To-day, the position of the American pharmacist parallels that of an inhabitant of some province. He must continue to be "a man without a country" until this citizenship is established and opened to him. The writer attributes to every American pharmacist the desire for this republic of pharmacy, of which all should be citizens, and of which citizenship all may be justly proud. Only when such constitutional construction for government in pharmacy exists can true patriotism in pharmacy be hoped for and realized.

During the last two decades A. Ph. A. thought has firmly dwelt upon the one shortcoming of the Association referred to as brought about by economic changes; for half this time it has been equally aware that to reënter its original relation in representation, nothing but its own organic law would need to be revised. Time has matured its conception until this revision is now volunteered by the Association as its duty to American pharmacy. The spirit of the founders is evident in the decision that the government of American pharmacy shall be in accord with the traditions of our national government.

The American Pharmaceutical Association has had much imagery forming and dissolving within its mind to this end; it has long struggled as though to translate instinct into thought, and that in turn and time to action. But, unquestionably, reorganization will shortly be undertaken, for the present expression of the Association is an intelligible utterance, that asks examination of its every function and then—the remedy.

EXECUTIVE COMMITTEE PLAN REORGANIZATION.

At the New Orleans meeting, in 1921, the Council instructed the Executive Committee to study this matter and present to its meeting in Cleveland in August of 1922, a comprehensive plan for reorganization. The Committee has prepared a plan and specified certain features in an explanatory statement which accompanies the plan; both are published in the JOURNAL OF THE A. PH. A. for April 1922, pp. 266–268. The submitted plan is now before the pharmacists of the country for comment and criticism. The Executive Committee is the architect in charge. The explanatory statement informs us that the plan, as submitted, is the view of many who have considered the matter. The following quotation from that statement very clearly outlines the purpose of the change and the immunity of all associations from other than beneficial effects. "The organization as outlined is intended to create a forum where all pharmaceutical associations and societies may get together on common ground for their mutual benefit, without losing their individuality or necessitating a curtailment of their activities." "It should be noted further, that the reorganization as here set forth will not necessitate the making of any great change in our Constitution, nor will the present funds of the Association be affected in any way." Those who study the plan and statement must be impressed with the truth of the quotations.

The writer's hope in offering these thoughts is to warn against a foreseen delay, and some minor complications without attempt to provide every possible advantage.

There will undoubtedly be many views for many are extremely interested in this subject; but none will be for progress that does less than the submitted plan sets out.

In the light of the Association's experience, let us proceed with impartial mind to a consideration of the main features submitted. The task warrants circumspection in all of our approaches; let not the mere sound of words alarm us, let us get their significance; nor let us accept a statement as conclusion but work up all expressions, simple and complex, into our own logic to find their actual, their lasting value; deal only with facts to avoid unsound reasoning; let us not cloud the problem with things neither intended nor possible; be frank to admit all defects, no matter where; concede all opportunities for improvement; and though it means self-effacement neither overlook nor underestimate a single feature for the common good. Let us neither be stampeded into objection nor corralled into support of any plan, but study the plan submitted and the needs as we know and find them. In the most practical of words, let us treat it as a business proposition of our own, and let us compare it side by side with the details and privileges of our citizenship in the Nation and the advantages which have been derived from it. Each of us would want to build our own business plan first in our own fancy; as this is our own business plan, let us do just that thing here. All know it is beyond the ken of mortals to lay a plan in all detail that can be assumed as perfect in operation until tried year after year, so that the major features alone need be considered at any length in print, although the details should be consistently tried against all seemingly important parts.

The plan is a stride forward in proposing a citizenship and delegate representation; and it makes plain that no other association will or can lose any of its individuality, prestige or possessions by coöperating with others within the opportunity to be created. Nor does the A. Ph. A. part with any of its assets, tangible or intangible; not one cent of its funds will be transferred to another; indeed, if we visualize an A. Ph. A. reorganized under the submitted plan we must be convinced that it still is the A. Ph. A., with the same purpose and the same funds. It could not be otherwise for not a voice will be heard that does not hold individual membership in the new

Association; the qualification of the delegate through this exaction of personal membership is an underwriting of the whole policy against any and all causes for apprehension that may be suggested. No matter, then more than now, how much or little is done, wisely or unwisely, it will ever be the A. Ph. A. because of this constitutional provision. So that from every point of view and fact the submitted plan is an offering by A. Ph. A. members to those eligible to membership and those already members; over and around our every consideration of this project let that fact hover as a recollection. Nor can there be more room or reason for apprehension with reference to sinister efforts or objects, when, under the auspices of none but its own citizenry, the Association is less exposed than it could be under the provincial-like nature of the conference which exists at present, in both House and general sessions.

The plan seeks, of course, to enlist an interest in organized pharmacy that will eventually have, because of evident benefits, the financial as well as moral support of every American pharmacist, both of which it hopes to warrant. Only those holding citizenship are permitted under any condition of government to represent other citizens—and as Congress offers an opportunity for citizen interest in civil affairs of national scope, so will the new A. Ph. A. offer similar interest in pharmaceutical affairs of national scope for its citizens. To the extent that Congress reflects the sum total of civilian interest, so will the reorganized Association correspondingly reflect its citizens' interest. Since associations grow as nations do we should compare our citizenship in both as we proceed in these thoughts, checking up all along the affairs of life outside of the realm of pharmacy, in order to discover whether the submitted plan offers as large a freedom without a greater exaction than does our civil citizenship.

The most important change contemplated pertains to that present part of the organization called in the submitted plan, as now, the House of Delegates. To-day this body, because of the privileges accorded, is composed of two classes of representatives from other associations, namely: delegates from state associations, having the right to vote, provided they as individuals are members of the A. Ph. A., and delegates from other associations and related bodies, who may participate in the discussion, but are denied the vote even though, individually, they are members of the A. Ph. A. To-day, and in the submitted plan, the conclusion of the conference in the House of Delegates is reported to a general session of the Association, to be disposed of, to be rejected or approved by the decision of that portion of the membership present at this particular hour, irrespective of its proportion to the whole membership. This situation is the most critical of all that reorganization asks us to consider.

In the opinion of the writer, this withholding of final power from the delegates is a defect, the only fundamental one in the submitted plan. We should here refresh our minds with reference to the organization procedure and finality in decision with which our civil citizenship has invested our civil representatives. In the course of this article additional thought will be given to this adjudged defect.

Some consideration may now be given to the use of the proposed conference opportunity, or the forum, by state associations and other organizations for mutual benefit; it being remembered that eventually the individual is to be organized into the A. Ph. A. as an eligible because of his membership in a state or other association; patterning his citizenship after its civil analogue. For years the belief in organization has had deep root in the minds of pharmacists; rarely do we find one who is not convinced of the actual and potential advantage of thus grouping the individual. The absence of his name from the membership list where he is eligible would not alone disprove our belief in his conviction to the advantage; while rarer still should be the association that would not be both willing and anxious to participate in that all-inclusive citizenship association which could represent every division of American pharmacy as well as every pharmacist. Truly, if there is virtue in the argument that the individual should pass into the smallest of the associations, there is equal reason that these in turn should associate until all are fully organized, as contemplated in the plan. No other course would be defendable, and reason would have lost its cause to folly, or to other weakness, if aught else were done. Acceptance of this truth brings us to accord on the need of organization of all divisions.

Except to follow out the foregoing thought—to learn where it would lead—there is no need to give it grave concern, for all evidence indicates the heartiest of coöperation by all of the associations. For several years past the states have been represented in numbers equal to that required for ratification in the submitted plan, while the national organizations have been

constantly in attendance per delegate. There can be no doubt that the state associations are not only wanting but waiting for some such arrangement as a means of developing and extending their organization ideas and efforts—bettering their publicity, improving their legislative talent, and increasing their membership. All of these things are the very life, growth and betterment of every association. What an opportunity for good is in the talent and experience of all the state and other associations if they are brought together within this national guardian of the common interest, instead of relaxing their influence at state or other prescribed lines, as now. No longer do state boundaries mark the limitations of interest by pharmacists in progress or in practice of the calling; as citizens of the Nation, aside from their vocation, they have a national interest in pharmacy as a health measure—as pharmacists with a national influence, they would be equipped for better protection of the public health.

There is no thought of absorbing or combining with another association—there is no association to-day that is in the least superfluous. All are justified, as we have seen by an examination of the economies and proprieties by which they were brought about. That there is no competition between the divisions of endeavor is freely acknowledged by all; that there is no conflict between any of the associations is equally admitted. That they are willing to coöperate is evinced on every hand; conferences abound to which representatives from all are welcome. But even such conference by any number or all, to-day, would be unable, because unwarranted, if necessity called, to speak for all American pharmacy as a unit, as Congress can speak for the Nation. Reorganization offers the voice which is needed, but which will not be used unless its act is truth in representation. Each successive conference has brought all nearer to the recognition of this need, until to-day no moment would be lost in using it if occasion seemed to warrant.

Again, in reason, there can be no interference or friction between branches of a common stock which in their growth expediency and time are training away from an equal consideration of actual pharmacy. They who study association effort will be brought face to face with the fact—that as the expediency of business more and more diminishes consideration of pharmaceutical matters the greater must be the need of an association devoted to the protection, practice, promotion and preservation of pharmacy for the benefit of all whose businesses are based or built upon it. This is said without the slightest intent at disparagement, and only after mature reflection on the desirability of emphasizing this situation.

To-day there is no organization that could undertake to accommodate the representation sought, and only the American Pharmaceutical Association could properly retain its present policy and name in such an undertaking. Every other association is so founded and constructed that it would have to be dismantled to the lowest layer and entirely reconstructed to suit the purpose. We have now seen that no individual or association is asked to give up any right or possession, but that they should all benefit through their citizenship in pharmacy; and, we have also seen that of the existing associations, with titles indicative of national scope, the A. Ph. A. alone is tenantable for use after change by all American pharmacy; for it alone has the purpose, the policy and the name, which are essential to the end in view.

Any new organization which will attain the objects sought, no matter by whom brought about, will be worthy of support by all. Of matters, which would seem to indicate duplication of effort by pharmacists, the accomplishment of such result outside of the A. Ph. A. is the only possible chance for duplication or actual overlapping in effort. All other forms of effort made for and all manifestations of interest shown in its membership by any association, or on account of the individuals in any particular division with whose special interests it is primarily concerned, are but open privileges, in kind and degree of efficiency, of every other association for such beneficiaries as choice may give concern. The more generally this is practiced the better and sooner must be the consideration that pharmacy asks for itself. Regarding such features the recorded opinion of representative American pharmacists is that these activities would be a strengthening of effort and of manifestation of influence, not a duplication. No association undertakes to do some of the things which could be done under an association that embraced all; but all are contributing effort toward the eventual development of such service to all pharmacists by a final association.

It has been suggested that if this arrangement of associating the associations was not soon undertaken by the A. Ph. A., it might be done elsewhere. It can be done outside of the A. Ph. A. as we have just agreed; all want it done somewhere; and, until it is done, it will be talked

about as a possibility. But, no matter where done, the credit and glory will be for those associations which coöperate in the doing and not to the mere place wherein it is done. But why build another house upon the only sufficient plot of purpose already so well covered by the A. Ph. A.? There would seem to be no room or reason for another structure to typify its purpose; there is, however, acknowledged room and need for such change as will permit the workers to cooperate to better advantage, so that neither effort will be wasted nor purpose fail. If it is believed that there should be a national association of state associations, aside from the arrangement which the submitted plan includes, or any other group that does not now exist, let us encourage their formation, that their true value may in time be found.

But there seems little or no need for such movement by state associations before the matter of reorganization now in hand is disposed of; nor at any time, aside from what effect it might have to induce adoption of a reorganization that would include the inestimable value of the state associations; for reasons hereafter given, that, wanting, as we do, integrity of order and progression in the plan to be adopted, let us recall that—in offering to every pharmacist in the now unorganized pharmaceutical population the privilege of citizenship (with the right of suffrage, which acceptance at his pleasure brings)—we contemplate, effect and operate an actual association of state associations as the very stock on which will be grafted all further efforts of improvement through the circumspection needed to assure the life, growth and betterment of every division of pharmaceutical endeavor. Then, why need the states further concern themselves with a separate and distinct organization of themselves? Especially since it would have no interest as an effort at specialization for the individual in which all such members would be equally concerned; and without which common interest it could neither justify itself, nor long survive.

Because of the scope of membership and the method of its progression through the state associations, as comprehended by all the plans, it is only to provide due consideration for each and every division's peculiar interests, strictly as such, that any plan need deal with representation from other source than the states. But representation of all these interests must be secured to the divisions as both promise and desideratum of this reorganization, whose proposed forum will offer opportunity for that coördination of these particular interests which must be had before the moral and financial support called coöperation can be effective. Since coördination must precede coöperation, we should aim to develop it to an equitable, an advanced ethical, degree. For this we recognize the need of delegates from national associations of every division of effort in pharmacy; these delegates to be in the capacity of *Representatives at Large*, whose special duty will be vigilance over coördination. Then does it not follow that every division should have a national association; and that such as now have none should proceed to organize them? The retailer, wholesaler, manufacturer, hospital pharmacist, teacher, board examiner, and civil government workers of both state and Nation in every department concerned, and the like of all of these should eventually, if not at once, be organized into national associations of their kind, from which representatives shall come to the A. Ph. A. to take part in attaining and maintaining uninterruptedly this coveted coördination. Theirs is indeed the super-task; the honor and the honors of the things are theirs alike.

We are now quite well satisfied that the proposed change is needed and that with final power for the delegates it meets all present demands in so far as we can see them; we are equally convinced that to-day the accommodation can be had only within the American Pharmaceutical Association. This being true, does not wisdom say it should be done therein? Agreed on all these points, the next step will be to make such alterations as are needed for the new tenant.

A CONSIDERATION OF THE PLAN.

To thoroughly avail ourselves of the suggestions by the Executive Committee, we should survey what now is, and, after forming a definite idea of what we have and what we think is needed, compare the submitted plan with our own plan and offer our thoughts to the Association. The writer has tried two methods of approach. The first was to study the submitted plan alongside of a criticism of it by another writer. This method proved unsatisfactory, for he recognized in his efforts a tendency to reconcile the other's thoughts in compromise, and perhaps accept that as sufficient for the time. Convinced of the uncertain value of the method, he undertook, apart from others, the task of conceiving upon the plot now occupied by the American Pharmaceutical Association an edifice to meet the needs sought for to-day, and some accommodation for the

future. By this method of giving thought to the subject, the true value of the A. Ph. A. more than ever engaged and filled his sense of appreciation.

The entire structure was scrutinized "from turret to foundation stone." These are the findings:

Its foundation and wall of unending concrete care resting on rock of human need are buttressed within by zeal and without by caution. The purpose—which as corner-stone dedicates this temple to the ages—still plumb, level and square as when first set, may well be left unprofaned by touch which could not make the truth more true. In length its wall—by encircling all—proves its sufficiency for remaining time; in height—adapted to the loftiest motive and aim; of thickness—in strength a fortress, unshakable from without; no need or reason here for change, impossible to have more, imprudent to have less. The roof—impervious 'neath torrential storms and blistering suns whose fury never shall be equalled—'twould be folly to disturb. The entrance—devoid of awe in forbidding face and repellent gesture—proclaims open house, as to a life-long friend. The very floor beneath our feet is in design a master mosaic of the efforts of the faithful, securely laid as far as they have gone; it is for us to add to this; within the future must complete. The light—abundant, not garish, helpful. The acoustics—perfect (one can hear whispers of encouragement from the past). The atmosphere—congenial in temperature; refreshing; ozonic with the new.

The finish of its every part shows willing work of freemen's hearts and hands. It would appear a temple imperishable, if temples never crumbled from within. What then is there to change? I saw the faithful who bring their treasures of effort here for offering. For half the time, with mine own eyes I've watched them come and go; before this vigil, I know them from the written page or comrade's lips. Their offerings are not made in mere empty self-defense, for they give their lives as well. (But that's the secret of the sphinx—Devotion.) No partitions but the lines of duty needed in a common cause; none other find we here, and they alone need change, since "new occasions teach new duties." But would it not be well to have experience take her brush and here and there with magic touch connect those hitherto unmeaning lines upon the walls of thought into the picture of to-day; that as the now-known allegory of our common cause it may greet the gaze for future guidance?

What shall be the lines of this new duty? Further thought laid a plan and tried it from every conceivable point of attack for faults and weaknesses. The features of the submitted plan, thought suited, were appropriated bodily as needed for this purpose. The following outline of the plan gives sufficient detail of methods of functioning, and particularly specifies those features of personal privilege with which all should be concerned. The details of committees, sections, similar and other minutiae may be left to be, hereafter, properly coördinated. The writer asks the closest study of the plan here offered under the same caution as that elsewhere advised.

CREATION OF THE HOUSE OF DELEGATES.

Taking up now consideration of both plans, it will at once be obvious that the change to delegate representation centers attention chiefly about the House of Delegates. This being true, to further test the offered plan for merit and defect, the House of Delegates was traced from its creation by resolution ten years ago to the present, through its entire life, past its establishment in a somewhat greater security through by-law action six years ago. Its life, its functions and its experiences have been searched and the findings laid beside the offered plan; every anomaly of its duty and power has been weighed; the comments and criticisms on its use and uselessness have all been noted—all for the purpose of understanding where or to what it has been leading. Tethered as it has been, it could go only so far. That it had wearied of its lot is little wonder, for not only were its actions restricted, but these were altogether dependent upon the will of others.

It would be inconsiderate to say of all history that it is a record of opportunity lost to co-operation; it may be inconsiderate to say that same thing of the last few years of the House of Delegates, but the evidence directs attention to the possibility of such loss, even though it does not justify complete condemnation. Whether the suggestion that established the House was but an impulsive offering of the hand, or whether it was advice laden with prescience that the motive behind the extended hand must have time to coördinate itself as well as be understood coördinately by others, none, perhaps, but its well-known author knows. The act, however, struck a responsive chord among other associations, as is so splendidly shown by their willingness to grasp this token of fellowship. Year after year they have come and conferred, withstanding

with genuine tolerance the restrictions under which they were present. It would seem that all the assurance anyone might ask has already been answered here by action. The writer believes that all of them are just marking time till a reorganization that permits of actual participation has arrived, others may wish to look for further evidence before deciding; but can these facts be known until the opportunity is opened? No meeting, call it conference or what one will, that is not empowered to make decisions for those it represents will or can do more than bring the delegates together for a better tolerance of each other's interests and views. It is like a groping in the dark by the constituency for something instinctively wanted but not attained, because of a dreaded uncertainty in the one next step which must be taken to reach it. Of course, caution is a determining factor in instinct, but why need the A. Ph. A. hesitate to take this one remaining step, either for itself or others, when it is remembered that in doing so the Association is still within itself?

We point with wonder and admiration to other American organizations, with responsibilities of related type, which we believe have an enthusiasm that would indicate they had found the way to largest things, and all the while we know they reached their present state by struggle that eventuated in a decision to take the final step.

Although the time of the House of Delegates has not been used to every apparent advantage it has been of some avail to all, for it has furnished that period in the scheme of things during which the instinctive wish of the groups for consideration has been gradually tempered by the circumstance of contact in conference to meet to-day's need in reorganization. For sheer personal association offers the opportunity to lessen doubt and fosters tolerance; tolerance established, in turn diminishes fear, making room for confidence, which then appears; and when fear is gone reason reigns. This last condition is unquestionably the state of mind and the soulful spirit of all who have attended the House of Delegates, but that only a by-law (of the House; chapter II, article I, paragraph 2) barred all from some real coöperation for immediate good is what might be taken for a loss of time and effort. May we not ask, have we not had enough encouragement from our invited guests to take the one next step needed to remove this by-law barrier?

THE HOUSE OF DELEGATES IN THE PLAN.

The insufficiency of the House has long been understood. Both its most valiant friends and its best meaning opponents have contributed to its progress from an expedient to its present prospect of usefulness. In the dark searchings of both friend and foe for something better, more than once the cry has been "either abolish the House, or make it worth while." These are the impulses which must finally be transmuted by thought into action. As regards disposal of the House, the plan here offered is a paradox: it both "abolishes the House" and "makes it worthwhile." And, if by any chance, the House should have to lay its name, but not its life, upon the altar for the Association, it will have served as only martyrs do. Aside from any concern in disuse of name, let us consider and decide upon the power that should be given the delegate body, for only through the limitation of its power by the submitted plan does it require a special designation. With final power it is the operating Association; with less, it fails in the actual fulfilment of the rights and efforts of our proposed citizenship. The submitted plan leaves it exposed to the futility of the past.

Let us visualize the circumstances under which our delegates must work for that progress and benefit we expect of them and we shall see that to give them less than final power is but to jeopardize the purpose and strength of their work to veto from the floor; and more than this, but finally. it puts the decision of delegates representative of the entire membership into the hands of that portion of this citizenry present at the hour. This will be as true with a 30,000 membership as with a 3,000 for, unless all human expectations fail, there will be an average percentage attendance; nor would the appearance of the entire delegate body in general session to support their opinions be either a sufficient or dependable guarantee of the adoption of their acts; nor should such expedient be imposed on men who in accepting the responsibilities of the delegate must understand their obligation to the whole.

The plan offered here revises the individual voting privilege to conform more closely to that granted by the state and Nation. The mail ballot for electing officers is retained un-

impaired for the entire membership. Like the submitted plan it requires every delegate to be a member in fact, just as civil law demands of civil representatives compliance with its rules of citizenship. This revision of the vote may appear either a great obstacle in our way to progress, or the most effective help and patriotism which the individual can render both our present and proposed pharmaceutical nation. As an obstacle it is easy of removal, because such action will reflect the belief of all members in the efficacy of organization, through their individual volition to concede equal rights to all—a fundamental ethic, that is but justice to one's self. Citizenship in pharmacy then, as in civil life, demands an equal franchise, whether used or not. It is this equity which begets the confidence that cements our Nation. It must now seem reason that to do away with present session action on the House's decision is to create an interest in this equal right that will beget a lasting confidence in every individual and group, not otherwise obtainable. Let the representative be responsible only to his constituency, whose privilege it is to select and reject and who will continue to elect the Executive Committee of the Association by mail as now. This mode of referendum to the equal right of all may always be turned to when emergency warrants. The franchise right of the citizen of pharmacy to send his choice of delegate would be in his mind no trifle unworthy of attention and use. He could feel that he is actually part of pharmacy. A careful examination of such advantages as these, from the establishment of this confidence, would seem to supply a sufficient reason why this revision of the scope of past prerogative should call for no other than unanimous consent. Especially is this warranted when we compare what we yield in our civil analogue, with no more prospect of appeal than here. There is no curtailment of the member's privilege to confer and be conferred with by any individual, section, committee or other division of the operating association. Special talent will be sought and should be offered as in the past. The voting privilege on the floor of the sections is continued, as it should be for these divisions of special effort.

Attendance upon the annual meetings need not lose attraction because of revision of privilege; it is for each to decide whether he prefers to be a representative in the business sessions, or worker in the sections, from where there is also delegate representation. The sections, as now, will offer a variety of interests, and will undoubtedly be greatly improved as the new order unfolds. The sections are admirably adapted for conference among those who labor with the problems handled by them, and cannot be dealt with for general good except by permitting participation by all, as now.

As to opportunity for office, there may be sufficient openings even from the start to require a large part of the present average attendance, especially if the feature which relates to this in the plan here offered is adopted. There will be work and the satisfaction which it brings, for all; so those who would can surely take their place in time and turn.

Recurring to the vital consideration of the House's power, there can scarcely be more than postponement in granting final action to this body, and in the face of the full knowledge that we must be called upon to again reorganize, before the echo of the present word is stilled. If "procrastination is the thief of time" then surely such hesitation is but "an accomplice before the act;" and history will need to write a page of opportunity lost to coöperation. If we are competent to interpret experience into deliberation for guidance there can now be no doubt of our being ready and fit to take the full and only sufficient step into real reorganization. Let us not try to reach it with one hand while pushing it from ourselves with the other. If it is longer withheld, only to break the shock to any present complex, we must not be unmindful that the momentum of our progress may, unknowingly, suffer quite as much from some other aspect equally exacting.

To give the delegates final power is to create a responsibility that will be more earnestly accepted than the vagaries and futility of their former state; nor can it well be either hoped or expected that less will much longer attract and hold those accustomed to assume responsibility, and make decisions in important things. They should be given final action, and given it to-day. The submitted plan could be given the writer's full support except for this shortcoming; all other features are insignificant compared to this.

If this is the only imperfection in the whole proposed institution, let us proceed in simple duty to American pharmacy to make the rules conform to the purpose. But since it is no less a duty of the A. Ph. A. to itself, why ask sanction of another? Or why not refer it to every association that is concerned, if referred to any? The duty with its full responsibility rests on

the present members of the A. Ph. A. They can do no more for American pharmacy, and knowing it, they should do no less. As American pharmacists have never failed to do their duty, as they see it, we feel assured that not only will reorganization be accomplished, but that it will also conform to our national traditions in citizenship; we must not forget that reorganization is a volunteered duty of the A. Ph. A.

The attendance of delegates from the many state and other associations, in the past, must incline us to believe that, eventually, under favorable auspices there would be few absentees; but in no event can the A. Ph. A. be less authoritatively representative than it is now. While the thought that participation in such new order of things, now the duty of the eligibles to themselves, suggests that time may elapse before full complements in either individual citizenship in pharmacy or association representation by delegates in the A. Ph. A. are attained. Participation cannot be exacted, it must be voluntary under all circumstances; there can be no proper participation until, as in civil life, the citizens convince themselves of the need of it. And, as in civil life, not only that portion of its organized citizenry which devotes attention to the operation and operators of government but all others do tacitly, and must lawfully accept the dictum of the representatives of those who give concern, so likewise must the nation of pharmacy both operate and acquiesce. All practice supports this conception.

Somewhere between the extremes in participation we must prepare to find ourselves, as we work out this next step in our evolving association life. A gradual acceptance by individual and group, and an average participation by delegates, should be depended upon from the start. There are matters for consideration with which each individual, not now a member, may want to acquaint himself, that he may better comprehend the possibilities of advantage from this citizenship, by comparison or other method. He may wish time to decide for himself such things as these: That to-day, membership in the A. Ph. A. is entirely the representation of one's self working singlehanded, to no effect at representation other than of one's self—then, membership will be work at representation of all the divisional groups for the individual's benefit. To-day, it gives only what the individual can do for himself as an individual; then it will give what the divisional groups can do as coöperators for the individual. To-day, its influence is as strong as the interest of the individual makes it; then, it will be as strong as the divisional groups make it. To-day, the names of the associations may be likened unto a list of "Colonies," where citizenship stops at provincial lines; then they will be The United States of Pharmacy, with a national citizenship and an equal boundary.

REORGANIZATION SHOULD GIVE MORE TO ALL AND TAKE FROM NONE.

If a plan can be set up that gives more to all and takes from none, and shows mechanical freedom of motion and power for result, why not start at once by adoption, and put in process such changes as are needed in constitution and by-law for the promptest operation? The plan offered here involves no more waiting than the submitted plan.

Under such new order of things American pharmacy is equipped as never before, and for all time, to devote a constantly greater care to the protection of pharmacy in every aspect for the good of all of the divisions of the industry. And, as we have seen, this will be more and more necessary to all divisions as time goes on. The sections of the Association will have this care as always. The sections are indeed, even to-day, but the offspring of the Association's original purpose; produced in natural functioning to perpetuate itself. They must be continued. The separate organizations which exist entirely apart from this Association for specialized effort of their respective divisions should be encouraged by all, for they are needed, as we have actually seen. Although their problems do partake of commercial consideration, there is need for a commercial section in the A. Ph. A. Commerce is a common care of all, for the matter of market in drugs is of prime importance wherein certainty of supply is a consideration that takes precedence even over price in the affairs of all divisions; besides there will always be pharmacists who, as a matter of choice, are developing the ways to profit from the application of a greater attention to pharmacy than to the merchandising of side-lines. This section offers, as it always has, conference advantages to all divisions.

The pharmacists and allied workers in the Government service should be given a section, as has been done for the hospital pharmacists. From the section of U. S. pharmacists, as a con-

stituency, representation may come into the delegate body as from other accredited sources. Need of like arrangement is plain, when we remember that as delegates from the departments of government, they could not commit the Nation to a policy, but can act for their section. The present Council remains almost unchanged except in conforming its name to usage of corporations, by calling it the Board of Directors.

The detail of nine vice-presidents selected for geographical representation, or of five taken at random, but in both plans elected as chairmen to specified positions, permits of some choice in decision. With state representation in effect, allotment of nine vice-presidents by geographical method would not appear entirely necessary; besides the selection of suitable names in nomination proceedings displays some difficulty, without much obvious advantage. The selection irrespective of location simplifies nominations very much.

There would seem to be needed at least three, perhaps four, large committees as indicated in the plan offered. The number of states very likely will always be about double the number of other sources of delegates, assuring a geographical influence of a very desirable kind. Besides, the states as groups will eventually represent all individual members of all of the divisions. The retailer will always claim the greater number of citizens in pharmacy.

Making a plan effective is no unimportant part of the plan itself; there is no putting aside of the elements of time and doubt in this connection, if we are to expect every pharmacist in America to consider entering into this citizenship. There is every reason to employ that time to better the result of any given period. Man involuntarily demands a certain measure of manifestation as proof of his security before he exacts the promise of profit. That measure must satisfy his sense of proportion in self-love; it must appear to compensate for all his risk, real and imaginary, if not, indeed, guarantee a later profit. Let us be careful then not to set up retarding or other temporarily inhibiting influences to the plan's adoption; better that we ask the least that need be asked. If understood by all for whom it is intended, when first offered, the task would be less difficult. While we have convincing evidence of immediate acceptance and participation by the groups, we should reckon with an average acceptance by the individual of the complete and continuous citizenship. Entrance is likely to be undertaken at points from which none should be turned away but, if possible, accepted and at the time their citizenship amplified as far as they will cheerfully consent to participate. The spirit of this new life will be contagious. Substantial acceptance can come only from individual conviction; general acceptance only when a sufficient number have demonstrated the practicability of it; later generations will be born to the manor. The movement of any composed group as an opportunity for individual betterment must be viewed as among the first impelling causes for individual acceptance by any very large number.

Demonstration has always been required of mechanisms; as much will be asked of the plan. Demonstration is better evidence than description, whether of mechanism or plan. There is nothing better with which to prove the words quoted from the explanatory statement of the Executive Committee; demonstration will assuredly substantiate them in every detail. The demonstration must be financed by the A. Ph. A. itself. If it does not ask for assistance in opening this great opportunity, it will not expose itself to questions which will be thoughtlessly employed to the end of producing much temporary indifference, instead of exciting a natural curiosity that leads through admiration to adoption. Nothing can make a better impression on the prospect than a complete financing by the demonstrator—this indicates confidence in his mechanism. While the two plans contemplate both moral and financial support by a gradually increasing membership, it would seem judicious for the present to continue with the method of having each new member contributing his own support as dues to the A. Ph. A., and with this as a starting policy proceed until past the initial stage of demonstration. No simpler plan for present needs can be conceived; none less objectionable; none more safe. Any adjustment or combination of dues as part of the acceptance will, at this time, introduce an unfortunate objection to any plan which carries it. A better rate of dues, for what is had, can be arranged when, after reasonable demonstration, economy of administration will point to benefits which cannot be disputed. So until then, and thereafter, to be eligible every delegate who comes must be a member of the A. Ph. A. in his own name, by payment of its customary dues.

It is true that more money will be needed to operate the larger scale of things which will be both possible and desirable under the new order; but all of this will be forthcoming in time as

the membership grows, and it is just as secure and quite as certain for the success of both purpose and plan that the feature of greater overhead should be gradually assumed, as the sustenance for it comes from the growing membership, in the form of an individual fee as now or, perhaps, a group fee later. A full-time Secretary will undoubtedly be needed without delay. Readjustments of present expenses will, of course, accompany any new allotment of duties to paid officers. All committee expenses will be met as now; there will be no need for a House of Delegates fund.

The plan offered here asks only moral support by other associations, at this time, without regard to numbers in interlocked membership, or any change in or combination of dues, within either the A. Ph. A. or other association. These matters will adjust themselves as continued demonstration proves the merit of the new affairs. Representation of complete national geographic compass is a most vitally important thing to provide at the very outset, and it can better be secured for the actual purposes for which it is eventually sought, by allotment than by a requirement in proportion to actual interlocking membership. In the opinion of the writer, the adoption of such allotment will neither retard nor diminish the funds received in any given period; instead it is his belief that this evidence, of an actual desire on the part of the Association to create this citizenship, will do more by at once inspiring confidence than all the promises which can be held out while the states are trying to convince their own. The writer has been told that four (or other number) delegates, allotted to each state as suggested, would not properly represent these associations, until all members of the state society were members of the A. Ph. A. His reply is that the delegate body sent by the state or other association represents its constituency, in fact, be it 4 or 4,000 holding interlocking membership, and it is to be hoped shall represent it in whatever pharmaceutical law shall be imposed until we have given ourselves some opportunity to assimilate the new things. The delegates themselves must of course qualify in citizenship; members of other associations who do not take up A. Ph. A. membership at once, will be alien to it, but are better and better prospects for citizenship as time goes on. Failure to get the immediate impetus for this great work which such allotment of delegates to the states would give will, in misfortune, be second only to withholding final power from the House.

It does not seem imperative that all present members of the A. Ph. A. not now members of other associations should be required to at once retroact into the other organizations; this feature could be left unto the days of more general adoption, at least; this would be safe to follow to avoid unnecessary assessment of dues, or loss from present membership. This procedure is in accordance with other affairs which must be adjusted to time. It would be opportune, however, and in strict accordance with the ultimate aim in reorganization, to require all applicants to be members of a state or other, or both, associations.

Special reason does not obtain for restricting the number of delegates to be allowed the national associations to less or to other method of appointment than that accorded the state associations. The remarks made regarding this matter in relation to the states apply with equal force in this connection. Whether the sections should have one or four delegates each, or none, for the reason given in note with offered plan, may be easier of decision after some experience. That their delegates need not go to the Board (Council) seems preferable from the fact that the entire personnel of the Board could and perhaps should be elected by the mail ballot in the hands of all. There must be a safeguarding of our new citizens' suffrage. Likewise the delegates from local branches might well be excluded from the Board, for the same reason. There would seem to be no urgent need for delegates from the local branches, as it is believed that most of their members are already members of their respective state associations. Their willingness to yield on this point need not slacken their enthusiasm for the progress and success of the Association which is so highly characteristic of them. Nor is there urgency for discontinuing these local branches nor of realloting them, until the plan is well under way.

Delegates, like non-delegated members, would be eligible for election to executive positions; in the event of such election of delegate, the vacancy would be filled from the respective source by the action of that source.

Present, last past, or earlier, incumbents of the offices indicated in the offered plan as supplying the delegates for association representation, or others, could be decided upon best by the several sources. The particular officers suggested in the offered plan are believed to be those who will in time be so delegated.

As we approach the conclusion of this study let us ask ourselves if there can be any well-founded cause for alarm lest the A. Ph. A. or any other body usurp any of the present functions of another association, or of any undertaking like work or efforts in actual and needless duplication? And, if we find that even likely, let us remind ourselves that such duplication must be in the interest of the citizenry, and ere long would be by them adjusted to their actual demands. Again, should an actual duplication be regarded as needed for a time or for a part till time adjusted, would such item of and by itself alone midst all the good be sufficient objection to oppose the whole grand plan?

Once more let us take up the analogy of association to nation, of vocations as groups to communities. The public is a large association, every individual belongs in some group that has a care for the future of that group and they, in turn, depend upon the work of other groups. In community life we have division for specialized effort and the business associations of the different vocations, but all are interested in and dependent upon all others and upon the public welfare, and all successes of these associations either bend to the best interest of the public for permanence or in time are dissipated through their inherent weaknesses. The common interest in pharmacy centers about a commodity, upon the exchange of which for value the whole industry rests. The public demand for this commodity is the radiant energy that actuates and activates every division of pharmaceutical endeavor, making the ultimate good of one the care as well as ultimate good of all. Under a plan of citizenship in pharmacy that gives full and proper representation, the mind must gain a clearer conception of the ethics needed, and, no longer need it be felt that our money investment in the commodity, like a crude instinct drives us into coöperation in defense of our common cause when it is threatened; instead, after a review of these seventy years, we can truthfully assert that an unfaltering faith, born of understanding, is our guiding spirit to that end.

If such duty-plan be offered American pharmacy there will be before each individual and group concerned the opportunity to realize every practical dream of the A. Ph. A. and of the other associations in the past.

The present membership will have proven its competence when individual self-conviction, which to-day is their only constituent and actuating power has expressed its spirit in a plan which courts and fosters progress, not for a season but forever.

Let all go into the temple that we may rededicate it to the ages with our new conception; then we will have done our duty; let those who follow take in turn the trust. As we enter, look with pride upon the name above the portal, no less distinct nor less distinctive than when graved there by that handful of courageous men—it is still—The American Pharmaceutical Association!

AN OFFERED PLAN FOR REORGANIZATION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Business Organization of Officers and Board of Directors.

Only members for 3 years or more are eligible.

General Officers: to be elected annually to serve one year, or until their successors qualify.
President and 5 Vice-Presidents elected by mail ballot in hands of entire membership.
Secretary (full time): nominated by Directors, elected by House.
Treasurer: nominated by Directors, elected by House.

Duties of President:

Preside at general sessions. Prepare annual address. Nominate such committees as not otherwise provided for, same to be ratified by Directors. Ex-officio member of Board of Directors, with vote.

Duties of Vice-Presidents:

In absence of President officiate in order of rank.
First Vice-President shall be Chairman of the House of Delegates.
Second Vice-President—Chairman of Membership Committee of House.
Third Vice-President—Chairman of Legislative Committee of House.
Fourth Vice-President—Chairman of Committee on Publicity of House.
Fifth Vice-President—Chairman of Committee on Organization Development of House.
All ex-officio members of Board of Directors, with vote.

Duties of Secretary: All of those given in the plan submitted by the Executive Committee and, in addition, he shall be Secretary of the Board of Directors, without vote, both here and in the House.

Duties of Treasurer: Exactly those of the submitted plan; member of Board and of House without vote.

BOARD OF DIRECTORS.

Personnel: Nine members, 3 elected annually by mail ballot to serve for 3 years. The President and 5 Vice-Presidents, all ex-officio, with vote. The Secretary and Treasurer, ex-officio without vote. Delegates from Local Branches and Sections not included; they go direct to House (see text).

Officers: Chairman chosen from the members of the Board. Secretary: Association's full-time Secretary.

Duties: as now (features specified to others excepted).

Elect an Executive Committee as now, if desired, with discretionary powers.

Select own committees as now, and without further ratification. These shall include those on Finance, Publication, Investments, other Funds, Transportation, Board of Canvassers (tellers of mail ballot). The Board shall supervise the Sections and control their finances; it shall decide on time and place of meeting.

Meetings: business may be conducted by correspondence, or in convention by entire body, or its Executive Committee, quarterly or oftener, in their discretion.

BUSINESS SESSIONS.

The delegate body shall conduct the business meetings as follows:

General Sessions—under the President, all routine business as distinguished from matters vitally important to the life, growth and betterment of this organization of all divisions of American pharmacy (for which purpose reorganization is effected).

Special Sessions—all matters which directly have to do with the features above mentioned shall be considered by the delegate body in special (if need be closed) session, when and where it may be designated—The House of Delegates, and when and where the First Vice-President shall preside. Members and the public may be admitted at the pleasure of the House.

GENERAL PROCEDURE.

The President shall convene annual meeting in usual way as introductory to the object of the occasion.

Credentials of delegates who have qualified through prior Board of Directors (Judicial Committee) meeting shall be announced.

The President shall convene all general sessions and occupy the chair, unless by resolution the business is brought within the scope of function of a special session (The House), when he shall turn over the meeting to the Chairman of the special session, as above outlined (as in the case of formation of committee of the whole).

Personnel: The personnel of general sessions shall be the delegates (known in special session, if preferred, as House) with same powers as accorded in special sessions. The entire membership and public are welcome to attendance on all sessions, special and general, unless by resolution the intention to close a special session is declared. The first and last general session shall never be converted into special sessions (so that at least one general session shall be held before special sessions are convened).

President's Address: First or next ranking Vice-President in chair; reading of address. Receive address and refer it to committee in House (appointed by Chair).

Routine Business: The general sessions shall transact such other business (under the President) as now transacted in general sessions (aside from legislation and the features specifically allotted to the House in a preceding clause).

Voting Privilege: The voting privilege is limited by agreement on delegate representation to the delegates. Final power is given the delegates. The mail ballot is retained for full membership as now.

Report of Directors: The Directors shall report to the House in general session.

Report of House of Delegates: One or more periods shall be reserved in the program for general sessions at which the report of the House shall be read, covering all business disposed of or on hand, and action taken. This duty shall be completed prior to the installation of officers for the ensuing year.

Nomination of Officers: In general session the President shall order roll call of sources of delegates as now from states. The delegates shall constitute the Nominating Committee (this arrangement gives all opportunity to confer on nominees). They shall make nominations for President, 5 Vice-Presidents and 3 Directors in duplicate or triplicate as now. Election to be by mail ballot as now.

HOUSE OF DELEGATES.

Membership: Only members of A. Ph. A. for 2 years or more are eligible.

Personnel: 4 delegates allotted to each source approved by the Judicial Committee, such as the national and state associations. 4 allotted to section for pharmacists and allied workers in government service. From a joint meeting of sections 4 delegates might be selected to represent all;* 4 allotted to each of other sections authorized by Board. All to be assigned somewhat after the following arrangement, which is worked out more with reference to state and national associations than with regard to section representation. President (or other) to Committee on Organization of House. Secretary (or other) to House Committee on Publicity. Chairman of Legislation Committee to House Committee on Legislation. Chairman of Membership Committee to House Membership Committee. These four great committees to compose the House, and take care of the features indicated, which are above all others the four needed at once and permanently. (Reference should be had to text concerning this allotment.) The full Board of Directors shall be members of the House, with vote except for Secretary and Treasurer. After House organizes it resolves into these four committees, and they in turn into their subdivisions.

Officers: The First Vice-President shall be Chairman of the House. A chairman pro tempore shall be elected as required. Secretary: The Association's Secretary.

DUTIES.

Legislation Committee: National legislation, law, rulings and regulations; confer on problems which confront states; educational Standards and registrations requirements, other affairs involving legislation.

Membership Committee: Promote membership as of importance in showing degree and quality of representation.

Organization Committee: Develop organization spirit and organization with a view to increasing efficiency of the work which will need to be done.

Publicity Committee: Secure an equitable publicity for pharmacy; devoting vigilance against unwarranted abuse from misunderstanding, especially in the press. These committees of the House to give attention to such matters as indicated by sub-committees, as follows:

Legislation: Sub-committees on codification, etc., law, jurisprudence, etc. Educational Standards (Faculties, Boards of Pharmacy, etc.); Model pharmacy law; reciprocal registration, etc.; Interstate commerce; health insurance; patents and trade marks; weights and measures; status of pharmacists in Government service, etc.

Membership—Sub-committees: Local Branches, etc.; General influence and propaganda; Trade relations (of the divisions), etc. The Membership, Organization and Publicity Committees have much work that is closely interwoven.

Organization—Sub-committees: Efficiency, Constitution and By-Laws; procedure, etc.; State and other affiliations. Committee on President's Address, special or its features referred to great committees as concerned. Committee on Resolutions, if not taken care of by particular committee concerned. All matters of foregoing nature referred to House by Board, committees, sessions, etc.

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* (As the writer sees it, this meeting would be equivalent to a general session of the Association and, since the inclusion of all pharmacists is contemplated (and then are elsewhere already represented) delegates from any Section (not exempting that of U. S. Service) is in his opinion a duplication and an unequal privilege to those present. Equity as the basis of confidence is what is sought throughout.)

Vote: One vote to each member; Secretary and Treasurer without vote.

Power: The action of the House shall be conclusive.

Report to Association: All decisions and all matters not disposed of shall be reported to the Association in general session as stated elsewhere, before the installation of officers for the ensuing year.

PROFESSIONAL ORGANIZATIONS.

The work of the sections shall be encouraged in order to extend their usefulness still further as a service to the public as well as to every division of American pharmacy.

The Sections will be conducted by the Association, under supervision of the House delegated to the Board for actual control. All to organize themselves as at present.

(1) Science: Research and control directed by Association.

Contributed:—Physics, chemistry, botany, pharmacognosy, pharmacology, biology, bacteriology, hygiene, clinical technique, drug cultivation, etc.

Proprietary medicines (composition and statements).

Ebert Prize, etc.

(2) Education: Boards and Faculties, Syllabus, etc.

(3) Professional Relations.—Ethics, label statements, etc. Delegates from Medical Associations.

(4) Standards (Authorities).—Nomenclature, U. S. P., N. F., Recipe Book, etc.

(5) Practice of Pharmacy.—Manufacturing (pharmacy, chemistry, biology, etc.). Wholesale. Hospital. Dispensing (store).

(6) Commercial Interests.—(Conservation committee.) Market. Business administration, accounting, merchandising, employment, etc.

(7) Pharmacists and allied workers in state and federal service, etc.—Army, Navy, Public Health, Dept. of Agriculture, etc.

(8) Historical.—(Procter Memorial.)

(9) Others as required.

Association Membership Dues: As now annually $5. Journal to be continued. Year Book to be continued. Mail ballot for officers as now.

START CAMPAIGN TO MAKE CRUDE DRUGS CLEANER.

A campaign to eliminate excessive dirt from crude drugs has been started by the Bureau of Chemistry, United States Department of Agriculture, which is charged with the enforcement of the Federal Food and Drugs Act.

An investigation by the bureau shows that the shipping of dirty domestic crude drugs is a rather widespread practice and is due largely to carelessness in gathering. Excessive dirt constitutes adulteration in crude drugs shipped within the jurisdiction of the Federal Food and Drugs Act. In some instances crude drugs were found to contain 20 percent or more of dirt.

This practice results not only in an economic loss to the purchaser who usually buys the crude drugs by weight but obviously lessens the medicinal value of the drug. This condition may be dangerous to the user, restrict the sale of the drug, and consequently lower its market value. Care on the part of the gatherers would prevent this great excess of dirt. The dealer who ships the crude drugs into interstate commerce is responsible under the Federal Food and Drugs Act and should take steps, say the officials, to correct this condition in order to free himself from liability to prosecution.

Ordinary care such as is exercised in marketing garden products such as carrots, turnips or spinach is usually sufficient. For instance, the washing of the fibrous roots such as goldenseal or unicorn root before drying would materially improve existing conditions, in the opinion of the Bureau. Inspectors have been directed to give special attention to shipments of crude drugs. Appropriate action under the Federal Food and Drugs Act will be taken in all cases found to be in violation of the law, it is said.

FREQUENT TURNOVERS OF STOCK.

The manager of one of the largest drug stores in Washington, one of a chain of such establishments throughout the country, says the shop turns over its stock twenty-four times a year in tobacco, fourteen times in fancy articles, principally toilet goods; 352 times in the soda water department and nine times for the whole store.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: A. G. DUMEZ, *Chairman;* J. H. BEAL, IVOR GRIFFITH, R. A. LYMAN, H. B. MASON, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*

Collaborators: S. L. HILTON, President, A. Ph. A.; C. A. DYE, President, A. C. P. F.; L. L. WALTON, President, N. A. B. P.; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; CHARLES H. LAWALL, Chairman, Council A. Ph. A. The Chairmen of the Sections, A. Ph. A.: HEBER W. YOUNGKEN, IVOR GRIFFITH, W. H. ZIEGLER, C. W. HOLTON, CURT P. WIMMER; E. F. KELLY and JEANNOT HOSTMANN of the House of Delegates; A. G. DUMEZ, Secretary of the Council, WILLIAM B. DAY, General Secretary, and H. V. ARNY, Reporter on the Progress of Pharmacy.

TRADITIONS AN ASSET.

May 22, the Philadelphia Chamber of Commerce gave a luncheon to representatives of Philadelphia manufacturing and business houses, founded one hundred and more years ago; 500 were at table, among them a number related to Pharmacy and the American Pharmaceutical Association. When Cyrus H. K. Curtis bought the *Saturday Evening Post,* he bought its traditions—"Founded A. D. 1728 by Benjamin Franklin"—and he capitalized the worth of these traditions. There is a difference between continuing and capitalizing traditions, using and not utilizing such assets. An organization that has endured for a long period has given proof of its honesty and helpful service. The AMERICAN PHARMACEUTICAL ASSOCIATION has for 70 years rendered service to humanity and its records of the same period speak of accomplishments for pharmacy that are part of its progress—let us think of this asset when we speak of the ASSOCIATION and those who faithfully served in its ranks. Dr. H. V. Arny refers to these resources in his address, printed in this issue of the JOURNAL.

RETURNED MEMBERS OF THE MULFORD BIOLOGICAL EXPEDITION HONORED.

A dinner was given at the Manufacturers' Club, Philadelphia, May 24, honoring the members of the Mulford Expedition of the Amazon basin, by H. K. Mulford Company. An informal reception preceded the dinner. N. E. Pearson of the University of Indiana, who accompanied the party as ichthyologic specialist, was unable to be present. Those who shared the honors of the evening with Dr. Rusby were—Dr. W. W. Mann, associate curator Division of Insects, United States National Museum, whose previous experience added greatly to the success of the expedition and, perhaps, in particular after Dr. Rusby was compelled to leave the party—and Dr. Orland E. White, curator of Plant Breeding at Brooklyn Botanical Garden, who accompanied Dr. Rusby as representative of the latter and Dr. Ames of Harvard University. Dr. White's work helped to round out the botanical studies of the expedition, which would otherwise have suffered when illness necessitated Dr. Rusby's return.

President Milton Campbell of the H. K. Mulford Company presided. He reviewed the history of the exploration, its inception with Dr. Rusby, and then pointed out that in this search an opportunity was seen to advance the professional side of pharmacy and further disseminate information concerning pharmaceutical and biological products. The fact that the expedition was governed by such professional motives and that the results are to be freely donated to science has brought about the heartiest coöperation on the part of government bureaus, colleges, and institutions of learning.

Those in attendance stood in honor of the members of the exploration and appreciation was general of the service rendered by them and those through whom the opportunity was made possible.

Dr. William C. Braisted was introduced by Mr. Campbell. Some time ago the former stated: "The problems of life and health as safeguarded by medicine are in their very nature so complex and rapid that successful advance demands the close coöperative effort of scientists of the wisest type, each a leader in his field, and each willing to merge his talents and his efforts in the common problem for the common good. "In the remarks of this evening he acknowledged that broadening acquaintance

with pharmacists and manufacturing pharmacists brought him more and more to a realization that professional pharmacy rested largely in the hands of the large pharmaceutical manufacturing houses; that his acquaintance with individuals who controlled the policies of these houses more and more convinced him that these gentlemen were actuated by motives guided by a high standard of ethics.

He made a strong plea for coöperation and enlarged on the possibilities of scientific coöperative work in prevention and curing of disease and pointed to the events which made possible and prompted this occasion as an example of what can be done, and hoped for further valuable results. He paid a tribute to those who made possible the expedition, all who participated in the exploration, and those who have assisted and will assist in the studies and investigations of the discoveries.

Dr. Rusby acknowledged the tributes paid by the speakers and the messages of those who could not be present, and spoke feelingly of those who shared the hardships of the expedition, and others who remained at home to take charge of the work. He stated that the work undertaken was for science without restrictions and gave due credit to H. K. Mulford Company. He outlined some of the results stating that specimens had been obtained of approximately 50 drugs relative to which there was varying degree of knowledge; a few were entirely new, of others the botanical sources of both genuine and spurious forms would now be known. He spoke of the famous Caapi used for ceremonial purposes among certain Indian tribes of Colombia, a fear-dispelling drug, containing a remarkable narcotic which further investigation may prove valuable. Another drug "mire" probably contains an alkaloid; it has influence on the motor senses and is said to cause a mild intoxication and induces profuse perspiration. The two latter are among the new drugs brought back by the explorers.

Among those who attended the enjoyable affair were: Drs. Solomon Solis Cohen, H. A. Hare, Ernest Laplace, Charles deM. Sajous, David Riesman, W. Wayne Babcock, J. Norman Henry, F. E. Stewart, Dr. F. B. Kilmer, Heber W. Youngken, Dr. J. M. Aldrich, Curator Division of Insects, U. S. National Museum; Dr. Clark and F. L. Lewton of the former institution, S. A. Rohwer of the U. S. Department of Agriculture, Dr. C. E. McClung, chairman of committee biology and agriculture, National Research Council, Charles E. Hires; Alba Johnson, president Philadelphia Chamber of Commerce, Dr. Kenneth G. Matheson, president Drexel Institute; S. L. Hilton, E. F. Kelly, Jeannot Hostmann, H. V. Arny, J. W. England, Paul S. Pittenger, Charles H. LaWall, E. Fullerton Cook, Ambrose Hunsberger, E. G. Eberle, Willard I. Hamilton, vice-president Prudential Insurance Company, Rev. Dr. Z. B. T. Phillips, H. H. White, members of the expedition, and others.

PERSONAL AND NEWS ITEMS.

Prof. John Uri Lloyd was honor guest at a dinner given during the fifty-ninth annual meeting of the Ohio State Eclectic Medical Association at the Hotel Gibson, May 16th. President Byron Nellans, of the Association, acted as toast master. Dr. Caswell A. Mayo spoke of Professor Lloyd as a chemist, stating that he had contributed over 3500 articles to medical, pharmaceutical, and chemical journals; 103 articles on avocational subjects; and had presented 129 essays to the Cincinnati Literary Club, besides having written four technical books; a dozen or more works of fiction, and having edited the "American Dispensatory," "The Drugs and Medicines of North America," and the Bulletins of the Lloyd Library; besides this he had been the active head of a growing and successful manufacturing firm, had taught chemistry in the Eclectic Medical College and in the Cincinnati College of Pharmacy for more than twenty years and had founded and supervised the management of the Lloyd Library and of the Lloyd Museum of fungi, both unique institutions of the highest scientific value and both remarkable monuments to the scientific knowledge and the liberality of the founders.

Dr. W. P. Best of Indianapolis, former president of the National Eclectic Medical Association, spoke of Prof. Lloyd as an author, giving the titles of the books which he had published, and summarized other characteristics.

Dean Rolla P. Thomas, of the Eclectic Medical College, spoke of Prof. Lloyd as a teacher, he himself having studied chemistry under Prof. Lloyd forty years ago.

Professor Lloyd made a feeling response to the kind words of the speakers of the evening.

Miss Mary A. Fein, secretary-treasurer of Arkansas Association of Pharmacists held a reception at her home in Little Rock, April 25. It was a joint anniversary celebration of her

birthday, that of Frank Schachleiter, secretary of the Arkansas State Board of Pharmacy, R. C. Harville, secretary of the Little Rock College of Pharmacy, Mrs. W. J. Danforth, wife of Prof. Wm. J. Danforth, principal of the Little Rock School of Pharmacy, and Miss Maud Craft, one of the guests. Entertainments and refreshments were provided for the guests, among them were more than 100 students from the School of Pharmacy.

Dr. Albert Schneider has resigned from the University of Nebraska and has accepted the chair of Pharmacology and Sanitary Science in the North Pacific College, Portland, Oregon, where he will also continue his study of cancer and tuberculosis. He will teach in the summer sessions of the University of California, course in criminology, and will also direct certain educational work in the Berkeley School for Police Officers. On June 2nd he will give two talks before the Peoria (Illinois) Medical Society on Cancer and on Tuberculosis. A report on the Treatment and Control of Tuberculosis will appear soon in the *Nebraska State Medical Journal*.

Mr. and Mrs. John F. Hancock, of Baltimore, have lately celebrated the sixtieth anniversary of their marriage. Dr. Hancock, who has been active in Baltimore drug circles for many years, is the dean of the living ex-presidents of the American Pharmaceutical Association. He presided at the meeting of the Association held in Richmond, Va., in 1873.

Dr. Oliver A. Farwell, chief botanist for Parke Davis & Co., was made vice-president of the section of botany at a recent meeting of the Michigan Academy of Science, Arts and letters, held at Ann Arbor.

W. M. Fly, a druggist of Gonzales, Texas, (for some years partner of R. H. Walter) is candidate for congressman of the ninth district of Texas. Mr. Fly has held positions in Texas in all of which he exhibited his ability and faithfulness.

Dean Johnson, of the Oklahoma School of Pharmacy, spoke before the Oklahoma State Pharmaceutical Association, on Pharmaceutical Bloc."

Sol. Eckstein, pioneer druggist of Milwaukee, has been compelled on account of poor health to retire from active business. He has moved to Battle Creek, Mich., where we hope he will regain his health. Charles Eckstein, son of our fellow-member, is assistant manager of the Wright Drug Company, of which his father was Manager.

Joseph Plaut, president of Lehn & Fink, has returned from a business trip to Europe.

"The Pharmic Edition" of the *Industrial Collegian*, South Dakota State College, advocates student branches in colleges of pharmacy. The issue contains sketches of the faculty members, a view of the Medicinal and Poisonous Plant Gardens and a window display featuring products of the latter.

OBITUARY.

OTTO GEORGE HOTTINGER.

Otto G. Hottinger, veteran Chicago druggist, died May 8. Mrs. Hottinger preceded her husband by a few months, and grief had much to do with his passing. From the records of Secretary Wilhelm Bodemann we have the following data:

"Otto G. Hottinger was born in Guttenberg, Iowa, May 10, 1856. Came with his parents to Chicago in 1860. Was apprenticed to H. Biroth in 1869; employed by John Blocki at time of big fire; clerked for J. Ehrman from 1874 to 1878; was in drug business in Grand Island, Nebraska, from 1879 to 1882; bought Laux & Waltman's store in 1884, and in 1902, Henry Schroeder's store, and operated that store ever since."

The deceased was a son of Anton Hottinger, a pioneer of Chicago and "father of Lincoln Park."

The Hottinger Drug & Truss Co. operated one of the largest and most successful retail drug stores on Milwaukee Avenue, and carried on a wholesale business in trusses, in the production and fitting of which Mr. Hottinger was an expert.

A record of the Chicago Veteran Druggists' Association, of which the deceased was a loyal and enthusiastic member, reads:

"*Frater* Hottinger was born on May 10; he was buried on May 10. And May 11 was Thursday, the weekly luncheon day for the Veterans. But there was no routine business transacted that day. Otto's chair, vacant, was in the usual place. His friends of the Veterans were there. But the usual jest and story, the badinage and the good natured banter were missing. The meeting, therefore, was of the nature of a memorial to him who was gone. Each *frater* arose in turn, and,

moist of eye and somewhat halting of tongue, told of Otto as he knew him. And then the meeting was over and the Veterans quietly, slowly, sadly departed."

One son, Dr. Edwin S. Hottinger, of Chicago, survives the deceased, who joined the American Pharmaceutical Association in 1910.

IRA BENTON CLARK.

Ira B. Clark, prominent druggist of Nashville for many years, died May 17, after an illness of several months. He came to Nashville from Indiana, where he was born, in 1891 and located at the corner of Fifth and Woodland Streets, where he continued in business ever since.

Mr. Clark took an active part in civic affairs and was recognized as one of the leading business men of Nashville. Since 1918 he has been a member of the Davidson County Court as a representative of the First Civil District; for eighteen years he was secretary of the Tennessee Board of Pharmacy; he was greatly interested in the work of the Davidson County Tuberculosis Hospital and a member of its board of governors.

Since the organization of the local druggists' association Mr. Clark has taken an active part in its affairs, serving for many years as an official. He was deeply interested in the State Pharmaceutical Association, was a member of the National Association of Boards of Pharmacy, of the National Association of Retail Druggists, and the American Pharmaceutical Association. He joined the latter organization in 1900, and members who attended the Nashville meeting of the A. Ph. A. will remember his interest in the visitors.

The deceased was associated with several business and commercial organizations; his fraternal connections were with the Knights of Pythias, and he was a member of the Episcopal Church.

Mr. Clark is survived by his widow, two sons—Ira B. Clark, Jr., and Lane Clark—and one daughter, Mrs. Wilbur C. Hailey.

For the data of this sketch we are indebted to our fellow-member, W. R. White.

SOCIETIES AND COLLEGES.

REMINGTON HONOR MEDAL PRESENTED TO REPORTER ON THE PROGRESS OF PHARMACY, H. V. ARNY.

The history of the Remington Honor Medal has heretofore been given and also the method of award. Instead of going into details on the occasion of the third presentation, the following references are made:

JOURNAL A. PH. A., Vol. VII, pp. 374, 467, 550, 551; Vol. VIII, pp. 517, 702, 704, 1071; Vol. IX, pp. 452, 483; Vol. XI, pp. 390.

A brief sketch of the Remington Honor Medalist Dr. H. V. Arny, will be found on p. 341 of Vol. V, JOURNAL A. PH. A. Briefly, he has been identified with pharmaceutical, educational, editorial and research work and as contributor for more than a quarter of a century. After graduation from the Philadelphia College of Pharmacy and the University of Göttingen, Germany, he became dean and professor of pharmacy at the College of Pharmacy of Western Reserve University. In 1912 he was elected professor of chemistry in the College of Pharmacy of Columbia University, and has been chemist for the New York Board of Pharmacy for several years. He also is Reporter of the Progress of Pharmacy and editor of the Year Book of the A. Ph. A.; author of a well-known textbook, "Principles of Pharmacy;" member of the Revision Commitee of the United States Pharmacopoeia and of the National Formulary; chairman of Committee on Research and editor of "Bibliography of Pharmaceutical Research," JOURNAL A. PH. A His researches in connection with colorimetric chemistry are well known.

A special meeting of the New York Branch, A. Ph. A. was held May 15th, on which occasion a testimonial dinner was tendered the recipient of the third Remington Honor Medal, at Hotel Pennsylvania. President C. P. Wimmer was toastmaster and made the introductory remarks. Dean H. H. Rusby spoke of "Arny as a Teacher;" President Hilton of the A. Ph. A., spoke of him as a pharmaceutical organization man; to Dean Charles H. LaWall was assigned the subject, "Arny as a Scientist;" and Dean Dr. Jacob Diner, before presenting the medal, spoke of the qualifications that pointed out the recipient as the choice of a jury of award, composed of ex-Presidents of the American Pharmaceutical Association—it gave him great pleasure to carry out the expressed wishes. Secretary Hugo H. Schaefer conducted the deliberations of the Committee of Award.

Mrs. Arny shared honors with her distinguished husband and it was a happy thought to also have their children present. Dr. Arny's speech of acceptance will be found in another section of this issue.

SCIENTIFIC SECTION.

The Scientific Section has sent out the following letter to members and asks for your coöperation:

In order to obtain a census of scientific pharmaceutical research and to stimulate further work, the following recommendations were adopted by the Scientific Section at its last meeting.

1. To ascertain the nature and extent of scientific work carried on by pharmacists, completed in 1921, and now in progress.

2. To urge workers to carry on at least one piece of constructive work dealing with scientific pharmacy and publish the original or an abstract in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

We cannot accomplish our task without the coöperation of those who are in a position to give it.

Should the splendid "Bibliography of Pharmaceutical Research," published monthly, be incomplete in any particular, give us the missing data.

Indicate the general nature of your studies in progress, so that duplication of work will be avoided, the scientific activity of pharmacists be more fully recognized, and new research be suggested.

Do your part in solving at least one problem connected with pharmaceutical research.

Prepare papers for publication, and at least one paper for presentation at the forthcoming meeting in Cleveland.

We count on you for full support!

Fraternally yours,

HEBER W. YOUNGKEN, *Chairman.* ARNO VIEHOEVER, *Secretary.*

SECTION ON PRACTICAL PHARMACY AND DISPENSING, AMERICAN PHARMACEUTICAL ASSOCIATION CLEVELAND, OHIO.

August 14–20, 1922.

The following letter has been issued by the Section on Practical Pharmacy and Dispensing:

Fellow member of the American Pharmaceutical Association,

Fellow worker in its ranks,

Fellow believer in its policies.

We are writing you this note to urge you to contribute a paper on some pertinent topic to be read in person or by proxy, before this Section at the Cleveland meeting. This Association is frequently asked what service it renders to the retail and practicing pharmacist in its ranks. This Section should be the answer to that question. Dealing as it does with the practical problems which affect the retail druggist and offering solutions to these many problems, it impressively and easily makes answer to the question.

Will you help again to fulfill the purpose of this section by contributing a paper on any phase of your work? Short or long, your contribution will be appreciated, and particularly so if it has to do with some of the current issues that are giving us concern. Hospital Pharmacy will be an important feature of this year's program, and it is hoped that Hospital Pharmacists will contribute in a large way to the scientific offerings of the Section.

The Pill-rolling Philosopher says "that a lighted candle hidden beneath a tin percolator sheds no useful light, and quickly dissipates in the heat of its own combustion." Seek then to scatter the light of your practical knowledge out in the open where toiling brothers, profiting by your light, can work unhandicapped by shadows. The simile is humble and timeworn, but impertinently pertinent.

Please let us count upon you, and remember these few points:

Titles of papers should be in the Chairman's hands if possible by July 1st, preferably before this time.

The papers need not be sent at this date, but should be sent before the end of the month.

Thanking you in anticipation, we remain,

Fraternally yours,

THE OFFICERS OF THE SECTION.

Chairman, Ivor Griffith, Stetson Hospital, Philadelphia, Pa.

Secretary, I. A. Becker, Michael Reese Hospital, Chicago, Ill.

Associates, John K. Thum, Lankanau Hospital Philadelphia, Pa. Clarissa M. Roehr, 2nd & Parnassus Ave., San Francisco, Cal.

BOARD OF TRUSTEES U. S. PHARMACOPOEIAL CONVENTION MEET IN WASHINGTON, D. C.

The annual meeting of the Board of Trustees of the United States Pharmacopoeial Convention was held in Washington, D. C., May 5, 1922, with the seven members of the Board in attendance. Treasurer Samuel L. Hilton sub-

mitted a financial report for the fiscal year 1921–1922.

Chairman E. Fullerton Cook, of the Committee of Revision, presented a detailed report of the work in hand and submitted a synopsis of correspondence with all of the foreign countries having pharmacopoeias; many of the expressions were very complimentary to the U. S. P. A special effort is being made by the Committee to secure an international uniformity of strength of potent remedies.

The Spanish edition of the U. S. P., which has now been on the market for several years, has been adopted as the official Pharmacopoeia of Cuba, Costa Rica, Porto Rico and some other Latin American countries. Arrangements are now being made for the translation of the United States Pharmacopoeia into the Chinese language, the book to be published in China and probably with the authority of the Chinese government.

The Board of Trustees is also arranging for the printing of an abstract of the proceedings of the printing of an abstract of the proceedings of the convention of 1920.

The Board reëlected James H. Beal Chairman and Henry M. Whelpley Secretary. The members of the Board are: James H. Beal, Urbana, Ill.; E. Fullerton Cook, and S. Solis-Cohen, of Philadelphia; Reid Hunt, of Boston; George H. Simmons, Chicago; H. M. Whelpley, St. Louis; Frederick J. Wulling, Minneapolis.

The 1923 meeting of the Board of Trustees will be held at Cincinnati, May 4 and 5.

REPORT OF A. PH. A. DELEGATE TO PROPRIETARY ASSOCIATION OF AMERICA.

Charles W. Parsons, delegate of the AMERICAN PHARMACEUTICAL ASSOCIATION to the annual meeting of the Proprietary Association of America, May 3–5, reports that the meeting was well attended and successful. The question of alcohol in manufacturing received much consideration. Hon. Henry Miles, honorary president of the Proprietary Articles Trade Association of Canada, and member of the Quebec Parliament, addressed the association on matters of common import. The officers of the association were reëlected for the ensuing year.

BRITISH CHEMISTS' EXHIBITION.

The British Consulate advises us of the 23d Chemists' Exhibition, Westminster, London, S. W., June 19–23. The Exhibition will consist of a most comprehensive display of drugs, chemicals and allied goods, and it is attended not only by the pharmacists of Great Britain but by those from other countries.

BERLIN PHARMAZEUTISCHE ZEITUNG COMMENTS ON A. PH. A. HEADQUARTERS.

Editor Hugo Kantrowitz sends us the following from the Berlin *Pharmazeutische Zeitung:*—"The great "American Pharmaceutical Association" has resolved to build a headquarters building, a sort of "Apothecaries' House" in a city yet to be selected, in which rooms for the Association's officials, for the publication of the wholly excellent Journal, the research laboratories, the Association's Library, the magnificently developing collection of exhibits, and a place for everything that in the future may be arranged for the benefit of pharmacy. The request at the same time for contributions from German colleagues at present low money values can hardly find them in the position of materially aiding this important enterprise for American Pharmacy, worthy of a hearty greeting."

THE THIRD INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

The International Society of the History of Medicine was founded in Paris on October 8, 1921. It has for its object the study of the History of Medicine *in all its branches* and the coördination of research work in these subjects.

The next meeting will be held in London from July 17–22, 1922. Meetings will be held at the Royal Society of Medicine, the Royal College of Physicians, the Royal College of Surgeons, the Wellcome Historical Medical Museum and elsewhere. There will be special exhibitions of objects connected with the history of medicine, surgery and the allied sciences. The officers are:

President of Honor, Sir Norman Moore, Bart., M.D.; *Vice-Presidents of Honor*, Sir D'Arcy Power, K.B.E., F.R.C.S., Professor Ménétrier, Professor Jeanselme, Dr. Tricot-Royer; *President of Congress*, Charles Singer, M.D.; *Treasurer*, W. G. Spencer, O.B.E., M.S.; *General Secretary*, J. D. Rolleston, M.D.

The Committee of Honor includes the Master of the Society of Apothecaries, and the President of the Pharmaceutical Society of Great Britain.

INTERNATIONAL PHARMACEUTICAL FEDERATION.

A meeting of the Central Committee of the

International Pharmaceutical Federation was held at Brussels, April 28 and 29, 1922.

The meeting comprised in all twenty-six members, representing Belgium, France, Great Britain, Holland, Sweden, and Luxemburg, including Dr. L. Van Itallie (Leyden), *President;* Monsieur V. Haazen, of Antwerp; Mr. Edmund White, of London; M. H. J. Hofman, The Hague (*General Secretary*); and Dr. A. Schamelhout, of Brussels (*Secretary*), members of the Bureau, and the following other representatives on the General Committee: l'Association Générale des Syndicat de France, MM. Loisel, Gollard et Bouville; Syndicat Générale des Phamaciens de France, M. C. Rousseau; Pharmaceutical Society of Great Britain, Professor Greenish and Sir W. Glyn-Jones; Apotekare Societeten de Suède, M. Poignant; Nederlandsche Maatschappij tot bevardering der Pharmacie, MM. Dr. H. Visser and W. Valkis; Luxemburger Apotheker Verein. MM. Kuborn et Knepper; La Nationale Pharmaceutique (Belge), M. Pattou.

After referring to prior meetings and the disturbances since the last one, President L. Van Itallie expressed the hope and belief that the work of the Federation would go forward. "We cannot hope," he said, "to influence directly the legislation concerning the pharmaceutical profession in the different countries. Ideas are too diverse. Partisans of limitation and partisans of freedom of action are formed according to the ideas which preponderate in the national societies, which are, in turn, dependent on the social state of the nations. People who have always held that the system of limitation is the only hope of the pharmaceutical profession would do well to study the difficulties which have arisen in those countries where changes in the form of Government have brought about changes in the system of limitation applied to the pharmaceutical profession. Even if we cannot hope to interfere successfully, at least we can study this important question. The reports which are submitted for your approval, and which have been collected in the Third Bulletin of the Federation, show that the Federation has the right to exist, and that it can do a great deal towards the solution of problems no less important than the one I have mentioned above: the continuation of the work begun by the Brussels Convention on the uniformity of formulas of powerful medicaments, the organization of International Pharmaceutical Congresses, uniformity of nomenclature, and pharmaceutical education. The International Treaty on the use of phosphorus, and that on the commerce of narcotics, welcomed by the whole world, are but the first special legislative measures as regards public hygiene."

Secretary J. Hofman referred to past meetings and stated that very little had been done since then but that there was evident an increasing interest. Deep regret was expressed at the death of the following: Professor Emile Bourquelot, of Paris; Joseph P. Remington, of Philadelphia; H. J. Moller, of Copenhagen, M. Alfred Martin, of Mons; Dr. J. Suyver, of Amsterdam; M. R. Schoep, of Maestricht; M. J. Griggi, of Alexandria.

The places of M. J. Moller (deceased), Dr. H. Martin (of Paris who did not want to be reëlected), and Dr. H. Salzmann (German) were filled by M. Kunt Sjoberg (Stockholm), M. Loisel (France), and M. Buhrer (Switzerland), respectively. The other members were reëlected.

Applications for membership were received from: Spain, Argentine, Serbia, Esthonia, Latvia (the President of this latter Society is M. D. Blumenthal, previously Secretary of the Russian Pharmaceutical Federation at St. Petersburg).

There was a discussion on the establishment of an International Pharmacopoeial Secretariat. A Commission had been appointed at the International Congress of 1913. The plan of Dr. Van Itallie provides for a commission who would study the value of various methods of estimation, and to utilize existing laboratories. It would be arranged to have two laboratories make the estimations; if the results were not sufficiently in accordance others would determine, until the results were sufficiently uniform.

The matter of uniformity of Pharmaceutical Nomenclature was referred to a Commission composed of the following: Monsieur Rousseau (France), Doctor Schamelhout (Brussels), Monsieur Friedrichs (Stockholm), and, in addition, Monsieur Hofman and Doctor Van Itallie, who, it was decided, should be "membres de droit" on all Commissions formed. A Commission on Education is composed of Professor Greenish of London; M. Grimbert of France; M. Van der Wielen, of Amsterdam.

Monsieur Collard, of France; Sir. William Glyn-Jones, of London; Monsieur Visser, of Holland, and delegates from Switzerland and Spain, constitute a Committee on Regulation of Sale of Pharmaceutical Specialties.

A meeting in 1923 was discussed, to be held in England; final action has not been taken.

A. PH. A. MEMBERSHIP PRIZES.

While, undoubtedly, most schools of pharmacy have given prizes of membership in the American Pharmaceutical Association, we have notice of the following from the Massachusetts College of Pharmacy: 1. Offered by Professor La Pierre for the best record in senior pharmacy—awarded to Charles A. Pederzoli; 2. Offered by Dean Bradley for the best record in senior analytical chemistry—awarded to Morris Stone; 3. Offered by President Packard for the best record in senior general chemistry—awarded to Mario Martucci; 4. Offered by Treasurer Godding for the best record in senior organic chemistry—awarded to Miss Ruth Burdett; 5. Offered by Professor Smith for the best record in senior materia medica—awarded to Antoine E. Greene.

Dean R. P. Fischelis, of the New Jersey College of Pharmacy has given the following memberships: 1. For the highest average in pharmaceutical chemistry—awarded to Solomon Barsel; 2. for the highest average in commercial pharmacy—awarded to Charles E. Fanslau; 3. for the best graduation essay—awarded to Samuel W. Gaidemak.

Donors of other memberships will be given in succeeding issues of the JOURNAL.

UNIVERSITY OF MICHIGAN, COLLEGE OF PHARMACY.

Prof. C. C. Glover, who is on leave of absence during the present academic year, expects to complete his work at Columbia by the close of the summer, and resume his duties as professor of pharmacognosy. H. W. Vahlteich, assistant in the food and drug courses, has been awarded a scholarship in chemistry at Columbia University where he will work for his doctorate during the coming year.

ASSOCIATIONS WITHIN ASSOCIATIONS.

Buffalo druggists have formed the Greater Buffalo Drug Club, an association which is probably unique in New York State as it is purely social, aiming only to give pleasure to its members and boost Buffalo in all ways. The more important parts of the drug business are left to the pharmaceutical associations.

The Technical Photographic and Microscopical Society was organized at a meeting held in the Chemists' Club, New York City, May 10. It is planned to hold a general convention of industrial and microscopical photographers in connection with an exhibition of photographic work, chemicals and apparatus to be held during the week of the National Exposition of Chemical Industries, September 11 to 16.

WHAT THE PAPERS SAY ABOUT DRUGGISTS AND THE DRUG STORE.

We must take note of items in the public press, even though these do not always please. F. M. Head of Los Angeles, before California Pharmaceutical Association, said—"druggists must recognize the fact that men now constitute a great and rapidly growing percentage of the patrons of the toilet articles and they must make greater efforts to accommodate that class of patronage." The Philadelphia Public Ledger says editorially: "The druggist has the satisfaction of knowing that he fills a more active and conspicuous place in the scheme of civilization than he ever did before. But his satisfaction must be tinged with regret over his ever-increasing responsibilities. And now there is this latest burden." And then reference is made to the remarks by Mr. Head.

Raymond G. Carroll writes: "The drug store has come to be the new center of community life, and scores of them in New York are putting in cushioned seats around the soda fountain, or stocking up with tables and chairs where there is room, and keeping open until long after midnight.* * *Just take notice from now on and watch the steady growth in importance as a center for congregation of the drug store."

OFFICERS OF THE AMERICAN MEDICAL ASSOCIATION.

At the annual meeting of the American Medical Association, in St. Louis, May 22–26, Dr. R. L. Wilbur, of Stanford, Cal., president of the Leland Stanford University; was elected president. Dr. Willard Bartlett, of St. Louis, was named vice-president-elect. Dr. Alexander R. Craig of Chicago, was reëlected secretary, and Dr. Austin A. Hayden, of Chicago, was chosen treasurer to succeed Dr. William Allen Pussey, of Chicago, who had held the post thirty years. The next annual meeting will be held in San Francisco.

Dr. Henry M. Whelpley made a special exhibit at the meeting. Among the items were a compound microscope made in Augsburg about 1750, a set of the nine editions of the U. S. P. and a set of the twenty editions of the United States Dispensatory.

THE PHARMACIST AND THE LAW.

STEPS TAKEN TO PREVENT COUNTERFEITING OF WITHDRAWAL PERMITS AND PHYSICIAN'S PRESCRIPTION BLANKS.

A new physician's prescription blank, to assist in the enforcement of the prohibition laws, has been designed by Commissioner Haynes of the Treasury Department. The new forms are printed on specially sensitized, watermarked paper, from an engraved plate bearing a special watermarked seal with the word "Prohibition" in large letters. For still further protection, an ingenious machine manufactured to resemble a check protector will be used on each withdrawal permit from a warehouse. The new form of prescription blanks to be issued to physicians makes it incumbent on the physician to indicate the name and address of the druggist who is to fill the prescription. While these changes will cause a halt in the counterfeiting of withdrawal permits on distilleries for liquor and likewise on physicians' prescription blanks for intoxicants, yet an agitation has been started to make it a penitentiary offense to manufacture counterfeit or forged permits, physicians' prescription blanks or letterheads, envelops or any other stationery used in connection with the enforcement of the prohibition law.

The circular in which these forms are authorized are described in Pro-Circular No. 91, obtainable from the Revenue Department.

FOUR DIFFERENT ALCOHOLS RECOGNIZED BY THE REVENUE DEPARTMENT.

The four different alcohols recognized by the Revenue Department are: 1. Pure nonbeverage alcohol, which is ethyl alcohol without the addition of any foreign substance. 2. Medicated alcohol, which is ethyl alcohol to which any one of the seven alternative chemical agents prescribed in Section 61 of Regulations 60, has been added, and which is permitted to be sold in pints or less at retail. 3. Modified alcohol, which is tax paid ethyl alcohol used in the manufacture of preparations rendered unfit for beverage purposes by the addition of tartar emetic, quinine, cinchonidine sulphate, resorcin, salicylic acid or some other approved modifying agent. 4. Specially denatured alcohol, which is tax free ethyl alcohol rendered unfit for beverage purposes by the addition of some authorized denaturing agent or combination of agents.

GOVERNMENT FISCAL YEAR ENDS JUNE 30.

Attention is directed to the fact that the Government's fiscal year ends on June 30, 1922. All persons, firms or corporations liable for special taxes requiring registration, must re-register on or before July 1, next.

Of particular interest to druggists are the following taxes:

1. Wholesale and Retail Liquor Dealers' Tax Stamps.

2. Narcotic Taxes—manufacturers, wholesale dealers, retail dealers, physicians and hospitals, general stores handling exempt narcotic preparations.

3. Persons liable for beverage and sirup taxes under Revenue Act of 1921 must re-register.

NARCOTIC LEGISLATION.

The growing interest in narcotic legislation, cultivation of the poppy for opium, traffic, etc., is evidenced by the contributions on these subjects in magazines. In the *Atlantic Monthly* for June, there are two articles: "America and the Opium Trade, by Ellen N. La Motte, and "India and the Opium Trade," by Girja Shankar Bajpai.

MILLER-JONES AMENDMENT TO THE FEDERAL NARCOTIC LAW SIGNED BY PRESIDENT HARDING.

The new law establishes a Federal Narcotics Board to be composed of the heads of the State, Treasury, and Commerce Departments, which is empowered to authorize the importation of such quantities of crude opium and coca leaves as may be found necessary for medical and other legitimate purposes. Any alien convicted of violating the act is to be deported, while for others a fine of $5,000 or ten years imprisonment is provided.

NEW YORK BOARD OF TRADE AND TRANSPORTATION, DRUG AND CHEMICAL SECTION OPPOSED TO NEW NARCOTIC LAW.

The Drug and Chemical Section of the New York Board of Trade and Transportation bases its objections to the law on the grounds that the regulations of May 1, 1920, adopted under the act of January 17, 1914, were effectively controlling exports.

It will not be possible to bring into any American possessions, the Philippines, Hawaii and the Canal Zone, from the United States,

any manufactured narcotics. The crude opium and coca leaves which may be brought into those possessions will not be of any benefit, says the letter, as there are no facilities there for manufacturing.

There is already a tendency on the part of foreign druggists, according to the section, to place their orders for narcotics where they may purchase them without the trouble and expense incident to procuring the evidence required by the U. S. Government regulations. If the foreign customer is compelled to buy from European houses his supplies of medicines containing narcotics, the inevitable result will be the entire loss of American general export drug trade.

The section points out that it has never opposed reasonable Federal control of narcotics, and has always supported the government's efforts to that end.

BOOK NOTICES AND REVIEWS.

Soap-Making Manual. A practical handbook on the raw materials, their manipulation, analysis and control in the modern soap plant. By E. G. Thomssen, Ph.D. Illus. $6 \times 4^1/_2$ inches, 243 pages. Price $4.00. New York, D. Van Nostrand Company.

This book contains a comprehensive account of soap manufacture. In the first and second chapters are outlined the origin and selection of raw materials used in the manufacture, and also details of the construction and equipment of a plant. The succeeding chapters deal with the manufacturing processes. The author treats of the various soaps ranging from the cheap laundry soaps to the expensive variety of toilet products. Descriptions of the manufacture of scouring powders, chip soaps and the three varieties of shaving soaps are very well given. The subject of liquid soaps is taken up in an understandable way, giving each detail regarding the clarification of same.

A good description is contained of the medication of soaps and their value in relation to the various uses. A chapter is devoted to the analytical methods used for testing the raw materials as well as the finished products, and the last chapter gives in detail the standard methods of sampling the raw material used, with illustrations of the machinery and plant layouts. The tables contained in the appendix add greatly to its practical value.

The work in a word, is a very complete detailed account of soap manufacture. The information it contains makes it valuable not only to the manufacturer but equally so to the analytical chemist. The clarity of thought shows the thorough knowledge which the author possesses concerning the subject. The table of contents indicates the scope of the book: I. Raw materials used in soapmaking, including definitions of soaps, oils, fats, saponification; methods of bleaching and treatment of oils and fats; rancidity and its prevention, chemical constants, oil hardening, alkalies, etc.; II. Construction and equipment of a soap plant; III. Classification of methods of soapmaking; IV. Classifications of soaps, *i. e.*, laundry, cold made, toilet, medicinal, transparent, shaving, liquid, textile, etc.; V. Glycerin recovery; VI. Analytical methods, and VII. Standard methods for the sampling and analysis of commercial fats and oils.

K. J. EHMANN.

PUBLICATIONS RECEIVED.

Proceedings of the National Wholesale Druggists' Association. Forty-seventh annual meeting held at Atlantic City, September 26 to 29, 1921.

The usual addresses and reports in these proceedings contain much useful information relating to the problems of the wholesale druggist and the wide scope of his field of operations are reflected in the many discussions on the reports submitted, these ranging from salesmanship and credits and collections to employers' liability and workmen's compensation, merchandising methods of retail druggists, proprietary goods, quality of medical products, etc. It will readily be seen that the reports have value to the retailer because of the close relation of these two divisions of the drug trade. An interesting account of the entertainment features is also given, and lists of committees, members, etc. The volume is a cloth bound book of 650 pages.

NEW PUBLICATIONS.

The Chemistry of the Garden.—By Herbert H. Cousins, M.A., F.C.S. Revised edition. Pp. xx + 147. Price 2s. net. London: Macmillan and Co., Ltd. 1920.

Chemistry: Lehrbuch der Chemie. Vol. I. Stoffe. Max Trautz. 534 pp. Price, 22s. 6d. Vereinigung Wissenschaftlicher, Berlin and Leipzig.